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HALF-YEARLY ABSTRACT

OF THE

MEDICAL SCIENCES.

JULY — DECEMBER

1845.

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THE

HALF-YEARLY ABSTRACT

OF THE

MEDICAL SCIENCES:

BEING

A PRACTICAL AND ANALYTICAL DIGEST OF THE CONTENTS OF THE PRINCIPAL BRITISH AND CONTINENTAL MEDICAL WORKS PUBLISHED IN THE PRECEDING SIX MONTHS.

TOGETHER WITH

A SERIES OF CRITICAL REPORTS ON THE PROGRESS OF MEDICINE AND THE COLLATERAL SCIENCES DURING THE SAME PERIOD.

EDITED BY

W. H. RANKING, M.D. CANTAB.

PHYSICIAN TO THE SUFFOLK GENERAL HOSPITAL.

Apparatu nobis opus est, et rebus exquisitis undique et collectis, arcessitis, comportatis.
CICERO.

VOL. II.

JULY—DECEMBER 1845.

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PREFACE.

The Editor is unwilling to allow the Second Volume of the "Half-yearly Abstract of the Medical Sciences," to appear without expressing his warmest acknowledgments to his professional brethren, for an extent of patronage which he had not ventured to contemplate. He regards this flattering circumstance as an evidence not only that the profession at large is anxious to be acquainted with the progressive advance of the Science of Medicine, but that the plan upon which it has been attempted to facilitate the acquirement of recent and valuable information has met with its cordial approbation.

In consequence of the liberal support which he has met with, the Editor has been enabled to increase the quantity of matter in the present Volume. He has likewise, at the suggestion of numerous Subscribers, appended a copious index of this and the preceding Number.

In future each volume will contain an Index, as well as the Table of Contents.

Bury St. Edmunds; *Dec.* 1845.

LIST OF BRITISH AND FOREIGN PERIODICALS REFERRED TO IN THE "HALF-YEARLY ABSTRACT."

BRITISH.

British and Foreign Medical Review.
Medico-Chirurgical Review.
" *Transactions.*
Transactions of the Provincial Medical Association.
Edinburgh Medical and Surgical Journal.
London and Edinburgh Monthly Journal.
Dublin Journal of the Medical Sciences.
Lancet.
Medical Gazette.
Provincial Medical Journal.
Medical Times.
Dublin Medical Press.
Bell's Pharmaceutical Journal.
Guy's Hospital Reports.

AMERICAN.

American Journal of the Medical Sciences.
" *of Science and Art.*
Philadelphia Medical Examiner.
New York Journal of Medicine.

FRENCH.

Annales de Chirurgie.
" *d'Hygiène.*
" *de Chimie et de Pharmacie.*
" *des Maladies de la Peau.*
Archives Générales de Médecine.
Bulletin des Academies.
Encyclographie Médicale.
" *des Sciences Médicales.*
Journal des Connaissances Médico-Chirurgicales.
Gazette des Hôpitaux.
" *Médicale.*
Journal de Chirurgie de M. Malgaigne.
Revue Médicale.

GERMAN.

Schmidt's Jahrbucher.
Zeitschrift für de Gesammte Medicin.
Müller's Archiv für Anatomie, &c.
Liebig's Annalen der Chemie und Pharmacie.

N.B. Every periodical here specified is consulted *directly* by the Editor and his coadjutors.

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The following TABLE OF FRENCH MEASURES is taken from Dr. Walshe's translation of Louis on 'Phthisis.'

The French line = $\frac{1}{12}$ of the English inch.

Measures of length.	English inches.
Meter	39·370
Decimeter	3·937
Centimeter	0·393
Millimeter	0·039

Measures of weight.	Grains Troy.
Gramme	15·438
Decigramme	1·543
Centigramme	0·154

Measure of capacity.	English pints.
Litre	1·760

ABSTRACT OF THE MEDICAL SCIENCES,

&c. &c.

PART I.

PRACTICAL MEDICINE, PATHOLOGY, AND THERAPEUTICS.

SECTION I. DISEASES OF THE NERVOUS SYSTEM.

ART. 1.—*On the premonitory Symptoms and Diagnosis of Insanity.*

By JOHN BURDETT STEWARD, M.D.*

"THE premonitory symptoms of insanity may be divided into two classes, viz., those which evince a predisposition to mania, and those which characterize its approach.

"In the former class, we have hereditary tendency—great natural timidity—a disposition to view all the occurrences of life through an exaggerated medium, leading to unwarrantable depression or elevation—a highly sensitive and delicate feeling.

"In the second class, or those symptoms which portend the approach of insanity, stands first, insomnia, or indisposition to sleep; restlessness—unusual irritability or excitability—abandonment of former habits—inability to follow any fixed pursuit—suspicion and unfounded dread of evil, avoidance of society—self-colloquy—a watchful yet averted eye.

"This combination of symptoms is not, however, immediate. At first a change is noticed in the manners and habits of the individual which scarcely attracts attention; it is felt rather than observed, and seldom elicits more than a passing remark. Gradually this alteration becomes more evident; some or all of the symptoms above enumerated are added; the sufferer is impatient of contradiction or control; he suspects all around him, and resists all attempts to pacify him. Daily he more and more develops his true feelings; the

* Practical Notes on Insanity. London, 1845.

caution which has for a time restrained him gradually diminishes; he takes less and less care to conceal his opinions and impulses, till at length the change becoming too evident to admit of doubt, the individual feels himself as it were detected, and confident in the truth and justice of his opinions, no longer hides but defends them.

"It is also to be observed, that whatever form insanity may afterwards assume, in its first approach it is almost always accompanied by derangement of the general health; the secretions and excretions are alike unhealthy, the tongue is loaded, and the circulation irregular."

[The proximate symptoms which in fact constitute the disease itself are divided by the author into the latent and the evident, the former requiring a certain train of thought to be hit upon in order to ensure their manifestation, the latter sufficiently appreciable on all occasions. The diagnosis of insanity from the diseases with which it may be confounded is thus stated:]

"The disease most likely to be confounded with insanity is delirium tremens; but the bustling agitated manner, the expression of anxiety generally about matters of business, the tremulous tongue, supported by the fact of the attack having been preceded by a fit of hard drinking, are ample for the purpose of right judgment."

[Hypochrondriasis is thought by the author to be the effect of dyspepsia upon a mind predisposed to insanity, and the distinction is in many cases not easily drawn. Hysteria also resembles insanity in some of its forms, but may be known by the incongruity of the symptoms, the peculiar coating of the tongue, muttering delirium, and above all by the sound sleep, which generally occurs as in health. To the experienced eye the general appearance of the patient is a sure guide.

From the delirium of phrenitis insanity is distinguished by the absence of fever in the latter, and the state of the pulse, tongue, and surface.] "At the same time we must not forget, that that form of symptomatic mania accompanied by increased circulation through or congestion in the brain, or its membranes, not only resembles phrenitis but sometimes ends in it. In such cases we can only become acquainted with the true state of the case when the maniacal symptoms subside simultaneously with the removal of the functional derangement." (pp. 11-22.)

ART. 2.—*On the Prognosis of Insanity.* By C. J. B. WILLIAMS, M.D., F.R.S.

(*Medical Times*, June 21, 1845.)

[In a lecture upon mental diseases, Dr. Williams observes that:]

"With regard to the prognosis of insanity, it may continue only a few days and then cease, and not return again, or it may last for a long period, or for life; and its termination may be either recovery, permanent aberration of the mental powers, or fatuity. The proportion of recoveries varies very much in different establishments, and Esquirol calculates that it varies from one in four to one in two. In England the average is below 50 per

cent. in public establishments. In the asylum at York, conducted by the Society of Friends, the average of forty-four years has been 50 per cent.; in the Exeter and the Limerick Asylums, the result for thirty-nine years gives the average of recoveries at 52 per cent. On the other hand, at Hanwell, about which we hear so much, the recoveries are only 22 per cent. for a nine years' average; but this being an asylum for the lower classes, many of these cases have been treated in workhouses and infirmaries previously, and they may be considered to be cases of the worst nature. Recovery sometimes takes place suddenly, and in recent cases it is usually after a sound sleep, or after a spontaneous discharge from diarrhœa; more generally the recovery is gradual with lucid intervals: the age of the patient influences the recovery; the young have a better chance, and in old people few above 60 recover at all. Pinel states that the recoveries take place within five or six months, on the average; and Esquirol remarks, that the greatest number of recoveries take place in the first year. The account given by Dr. Thompson with regard to the York Asylum is, that the recoveries take place within three months of the first attack, in above 50 per cent. Esquirol gives a table of cases not complicated with paralysis, in which, out of 2005, 604 recovered in the first year, 497 in the second year, 86 in the third year, and only 41 in the seven following years. In a few rare cases, recovery takes place after a much longer period. Pinel gives a case of a girl who was mad ten years, and suddenly came to her senses, on the reappearance of the catamenia which had been suppressed. After the first month the disease is apt to become chronic. Sometimes the recovery is complete, the patient being in mind and body as sound as he ever was; but in the greatest number of cases there is a great liability to relapse, and where the disease is not properly removed, the patients, though quite rational, never have the same strength of mind they had previously."

ART. 3.—*On the Medical Treatment of Insanity.* By Dr. WOODWARD.

(*American Journal of the Medical Sciences*, April 1845.)

[The following concise observations upon the important subject of the medical treatment of insanity occur in Dr. Woodward's report of the State Lunatic Asylum at Worcester, United States. We shall give the extract nearly in the author's words:]

Bleeding. All agree that depletion by general bleeding and active cathartics is not favorable in insanity. If bloodletting procure relief, it is but temporary, and the excitement generally returns with greater violence than before. *The indications for active depletion are the effect and not the cause of excitement.*

Cupping and leeching. Local bleeding though less injurious than general, cannot be relied on to cure insanity. It is only useful temporarily, in order to reduce excitement, until other remedies can be brought to exert their influence. If there be much determination to the head, cupping may be resorted to, while other means are used to restore the equilibrium of the circulation. In some cases of maniacal

excitement, a state of dementia immediately follows excessive venesection.

Cathartics. Drastic purging is often even more hurtful than bleeding. The digestive organs of the insane are peculiarly susceptible of disturbance, dyspepsia, vomiting and costiveness or diarrhœa, being often troublesome symptoms with them. Drastic purgatives generally aggravate these symptoms when they exist, and produce them when they do not. Constipation is generally to be obviated by mild cathartics; and is far less troublesome than diarrhœa, which is often an obstinate, and too frequently a dangerous symptom when attendant upon insanity. If the secretions of the liver are unhealthy or deficient, blue pill or small doses of calomel may be indicated. These remedies often produce very favorable impressions, and prepare the system for others which may be necessary to remove the insanity itself. In short, cathartics, as such, rarely do good in insanity, but alteratives are often necessary, and in many cases cannot be dispensed with. Tincture of rhubarb, and senna, with aromatics, are valuable remedies of this class.

In torpid states of the intestinal canal, my favorite remedy is the tincture or powder of guaiacum; no remedy has been in my hands more successful than this, in melancholy attended by dyspepsia, and distress after taking food. It invigorates the stomach, acts upon the skin and bowels, and in females is emmenagogue. It may be given in doses from 1 dr. to ½ oz., three or four times a day in milk and sugar. If the object be chiefly to act upon the bowels, the powder is the better form.

Croton oil in small doses often proves serviceable in the removal of costiveness.

Narcotics. This is by far the most influential class of medicines in acute mania, after the system has been duly prepared. It is generally conceded in the present day that the condition of the brain in mania is not inflammation, but rather a high state of nervous irritation. For this state of the brain, narcotics would seem to be the most natural remedies, and experience shows that such is the fact.

Morphine. The remedies of this class most extensively useful are the muriate and other similar preparations. The exact time, circumstances, and cases when these remedies can be applied with the greatest benefit, must depend upon the judgment of the practitioner; on this doubtless depends their greater success in the hands of some men than in others. The morphine should be administered in solution, the dose proportioned to the urgency of the case. Moderate doses should be tried in the first instance. When the medicine acts favorably it exercises controlling influence over the symptoms, and the patient becomes more tranquil and rational. The time in which it is necessary to persist in the use of this medicine, varies from a few weeks to many months. In the few cases in which it is necessary to administer narcotics in large doses, to produce decided impressions, the tincture of opium is the best preparation. Dover's powder has been used by us when the skin is dry, with the most marked benefit.

It is rare that any benefit arises from single doses of opiates at night, to produce sleep, unless the system be kept under the influence

of them the whole time; in violent cases, the doses should be repeated once in four or six hours. It is important to know the symptoms which contraindicate the use of narcotics. When the skin is hot and dry, the tongue furred, or dry and red, the bowels costive, the pupil contracted, and the conjunctival vessels injected, they cannot be used without injury.

Datura stramonium. This acts favorably in some cases, disappoints in others, and in some cases aggravates the symptoms. In cases connected with epilepsy, Dr. Woodward has seen excellent effects from this remedy. It is seldom, in a case thus complicated, that the patient entirely recovers, but under the use of stramonium, the symptoms are often greatly diminished in force and frequency. In some cases the epileptic attacks have been entirely suspended; but the medicine must be given in doses sufficient to dilate the pupils and produce some difficulty of vision; the preparation preferred by Dr. Woodward is the tincture of the seed.

Conium maculatum. The extract of hemlock either alone or in combination with mineral tonics, has proved useful in some forms of insanity. It is worthy of but little confidence as a means of removing maniacal excitement, but for some forms of melancholy, especially if combined with dyspepsia or neuralgia, it often proves very useful. In cases of melancholy also, complicated with disease of the stomach and torpor of the liver, attended with uneasiness, restlessness, and nervous pains, it is often auxiliary of cure. It may be used in large doses without danger. The minimum dose should be ten grains three times a day, the maximum two or three drachms, as frequently repeated. Dr. Woodward has rarely seen any advantage from less than from fifteen to twenty grains for a dose three times a day, but commonly gives from thirty to forty grains. The efficacy of the extract appears to be increased by its combination with the carbonate or red oxide of iron.

Hyoscyamus is a useful medicine in some cases of moderate excitement, and in sleeplessness. In high maniacal excitement, and in the extreme suffering of some cases of melancholy, it is only an auxiliary to the more powerful remedies before considered. Its virtues have probably been overrated, but it is worth a trial in many cases which do not require more potent medicines. I hardly know of a remedy more likely to produce sleep in simple watchfulness, than a combination of hyoscyamus, camphor, and lupuline, from two to five grains of each.

Nux vomica. Dr. Woodward uses this medicine in cases of melancholy with flatulence and general muscular relaxation, and combined with the nitrate of silver in neuralgia, epilepsy, and chorea. The first unpleasant symptom arising from its use is a sense of constriction of the stomach.

Ammonia, ether, aromatics, &c. These have been found serviceable by Dr. Woodward in low cases of melancholy, and even in cases of excitement, when the skin is cold and moist, with weak pulse and other indications of a languid circulation. "In some cases of recent dementia in which the patient will stand like a statue, with the face fixed to the floor, moving neither hands nor feet, neither taking food

nor attending to the calls of nature; strong stimulants, aromatics, and cordials are indicated, and often produce decidedly good effects."

Tonics. "In acute mania after the first excitement is over, tonics are often indicated, and not unfrequently may be used with propriety early in the disease." When the patient is exhausted and feeble, although still excited, quinine bark and often wine are beneficial, used at the same time with narcotics. In melancholy, our principal reliance must often be placed in tonic medicines. Bark, and sulphate of zinc, are often of great service in this form of insanity.

Baths. In acute mania the warm bath used frequently, and for a lengthened period is found by the author to be decidedly beneficial. It is also serviceable in melancholy and chronic insanity, when the skin is in an unhealthy condition. Cold douches to the head, and warm pediluvia are important adjuvants in the treatment of insanity. The nitro-muriatic-acid bath, the mustard and the salt-water baths are also commended, and where baths are objectionable, frequent ablution with warm water.

Art. 4.—*On the Treatment of Epilepsy by Digitalis.*

By D. J. Corrigan, M.D., Lecturer in the Dublin School of Medicine.

(*Dublin Hospital Gazette*, May 1845.)

Digitalis (*foxglove*) has been used by the rural districts of Ireland, as a quack remedy for epilepsy, from time immemorial. Its effects, as administered by the fairy-women (as those professing to cure the disease are called) have been so violent, that the profession has shrunk from its administration, although success had in many instances followed its exhibition. The following is the formula which is generally used: Fresh leaves of digitalis, four ounces; beat into a pulp, and pour over it a pint of boiling beer; infuse for four hours and strain with pressure. Of this give every third day four ounces, with fifteen grains of dried root of polypodium. In another formula the dose is to be repeated every third hour until vomiting is produced. In 1828, Sir P. Crampton informed me that he had superintended its exhibition in four cases, and that in three of these it had been successful, but that he did not venture beyond the first dose, its effects were so violent. It caused violent and continued vomiting, like that of sea-sickness, which continued incessantly for twenty-four hours, with irregularity and feebleness of pulse that remained for several weeks after.

In the year 1831, Dr. Sharkey, of Cork, in a paper in the Lancet, drew the attention of the profession to its good effects in the disease, given according to a similar formula. The effects of a single dose of four ounces, were vomiting, soreness of epigastrium, cold extremities, cramps, and great depression and irregularity of pulse, continuing for several days. I exhibited the remedy myself in the same form, and am not surprised that the profession should shrink from employing it. The first dose produced the most violent vomiting, followed by cold sweat, feeble and irregular pulse, and these symptoms again by intense

gastritis, accompanied with great sinking of the vital powers, and double vision, which continued for several days, and were sufficient to deter me from ever again venturing on its administration in such a dose. There are some circumstances connected with the effects of this large dose that may be worth noticing here. It was given at ten o'clock a.m.; at twelve o'clock the pulse had fallen thirty beats, viz., from eighty-six to fifty-six, and there was headache with very slight nausea; it was not until eight o'clock, p.m., ten hours after the administration of the dose, that the violent symptoms set in. It then occurred to me that, as it is a remedy possessing accumulative property, I might succeed in saturating, as it were, the nervous system with its sedative property, without the risk of inducing those frightful effects which follow on the sudden exhibition of the large dose, and I believe I can now say that this important point in practical medicine can be gained. After many trials of its preparations, I give the preference to the infus. digitalis of the Dublin Pharmacopœia; but I cannot too strongly insist on the necessity of the greatest attention being paid to see that the leaves are well prepared, and of the latest gathering; one of the cases narrated will exemplify the necessity of this caution. The mode of administering is to begin with 1 oz., of the infusion every night at bed-time, increasing it after a week to $1\frac{1}{2}$ oz., and after another week, to 2 oz., beyond which it is rarely necessary to go, and continuing it until sickness of stomach and dilated pupils are observed, when the dose is to be diminished by $\frac{1}{2}$ oz. or 1 oz. until the maximum dose that can be borne without inconvenience is ascertained, at which the administration is to be continued for two or three months. Given in this way its exhibition is attended with no inconvenience, beyond an occasional attack of slight sickness of stomach in the morning, or headache, &c., when the medicine is to be omitted, and a day or two are to be allowed to pass over before resuming it. With the exception of these symptoms, there is no perceptible effect beyond the slow action of the heart, and the patient during its use is able to follow his ordinary avocations.

Case 1. Mr. M., aged 27, consulted me in March, 1841: he gave me the following history of his case. In the preceding August (1840) he suddenly alarmed the members of his family, by exhibiting himself in the middle of the night in a state of violent mania, which continued for some minutes. From that period up to the present time he has had repeated attacks at night, the longest interval having been once a period of five weeks. These attacks are thus described: his brother, who sleeps in the room with him, is roused by hearing him make a noise in his throat, and this is followed by a suffocative convulsion, in which he awakes in the greatest distress and suffering; he then falls into a fit of general convulsions, and on this ceasing, he remains delirious and ungovernable for some minutes. His tongue today bears the marks of having been bitten in an attack which he had last night. For a long time he only suffered from these attacks at night, but lately he became suddenly unconscious, and fell from the desk in the office of a very important public establishment, and this circumstance has aggravated very much his anxiety about his illness; he knows of no cause whatever to which he can attribute these attacks.

His appetite is good, his bowels are regular, but his pulse is full, and he has almost constant noise in the head. He had been taking, previously to my seeing him, nitrate of silver, ammoniuret of copper, strychnine, &c., without any benefit. I directed cupping on the back of the neck, and an issue afterwards in it, and desired him to take half a grain of tartarized antimony every night.

He continued this medicine up to the 9th of April; he has had only one slight attack, but he says he feels as if his mind was growing feeble. The tartrate of antimony was discontinued, and he took every night a draught at bed-time of ol. terebinth, dr. j, ol. valerian. gutt. j.

May 2d. There has been no attack since, and his general health is improved. To discontinue all medicine except a lavement when required.

May 12th. He called on me to day with the bad news that the fits have returned; he has had two within the last ten days. The attacks now return as before, and although all the remedies which previously seemed to benefit him were employed, and various others which it is unnecessary to recount, the disease appeared to be fixing itself more inveterately upon him, the attacks now coming on with great violence every four or five days, and leaving after them heaviness of head, confusion of intellect, and loss of memory. I now felt great anxiety indeed for him, as the loss of his post in a highly important public office seemed inevitable, entailing the destruction of his prospects in life. This was his state in August, 1841, when I ordered him the infus. digitalis of the Dublin Pharmacopœia, in the dose of a wine-glassful every night at bed-time, to be increased if he could bear it; he increased the dose to oz. iij every night, and on August 15th, he called on me with greatly improved spirits; he has had but one slight attack within the last thirteen days.

Sept. 22d. The attacks are now very slight, about one in every ten or eleven days, but preceded often for a day by a frequent desire and inability to pass urine. He had this symptom, however, occasionally before he commenced the use of the digitalis. *The digitalis to be continued in the same dose.*

Oct. 20th. The attacks are now so mild that they do not awake him, there being nothing more than a slight convulsive motion of the throat, he only learns of their occurrence from his brother, who occupies a bed in the same room with him. As the digitalis was not producing its specific effects, I ordered him to take 4 oz. of the infusion for a dose; this produced no more visible effect than the former dose, when an accidental circumstance led him to obtain a repetition of the infusion from a different supply, which must have been much more carefully preserved, for in a few days he was obliged to discontinue its use, and then, on returning to it, to reduce the dose to 2 oz. as at first. In this dose he continued its use for about three months; the attacks of epilepsy gradually became milder and milder, and at length ceased altogether, and I have had the gratification of seeing this gentleman very frequently in good health and spirits; nearly four years having now elapsed without a return of an epileptic attack.

Case 2. On Sept. 8th, 1841, in consultation with my friend, Dr. Neligan, I saw Miss ——, aged 27. Without any apparent cause, she was seized whilst on horseback with stupor, and would have fallen from the saddle had she not been supported. Similar attacks frequently returned for the period of a year, and often without any apparent cause to give rise to them; she was then for some months free from them, but they again returned. In these attacks she was conscious, but her feelings during each, though indescribable, were of the most painful kind. Sometimes she would fall, at other times not. After some time the hands and arms became rigid in the attacks, which at last settled down into true epileptic paroxysms, the limbs becoming convulsed, with foaming at the mouth; these attacks were preceded by warning symptoms of ringing in the ears; but these have ceased, and she is now, without any premonitory signs, seized with a fit, while walking or dressing, falls suddenly and is convulsed. The attacks have also latterly become very frequent; she had one on the 25th of August, another on the 1st, and another on the 2d of this month. Her general health has been greatly improved by a trip to Harrogate; leucorrhœa, to which she had been subject, had ceased, and in the intervals of the attacks she is in the enjoyment of perfect health. We prescribed for her the infusion of *digitalis, in doses of* oz. ij, *and ordered shower-baths.*

Sept. 17th. The draughts produced sickness and occasional vomiting in the mornings; when these symptoms occurred they were omitted for two nights and then resumed; they do not now cause the morning sickness; the appetite and general health continue good, and the only apparent effect of the draught is a lowering of the pulse, which beats now about fifty. There has been only one slight attack, which occurred the morning after the first of the draughts, which proceeded no further than loss of power; the draughts to be continued. Dr. Neligan informed me in October, that there had been no return of the attacks; the infusion of digitalis was continued in the same dose, and was occasionally followed by sickness in the morning, very much resembling sea-sickness, but, as before, there was none felt during the night. The draughts were then discontinued, to be again resumed as before. This case was lost sight of, but the effects of the digitalis, for the short time it was given, were most satisfactory; previously to using it, the attacks were very frequent, being often of daily occurrence, while on commencing the remedy they almost immediately ceased, and did not return as long as the case was under our observation.

[We believe that the epileptic cases in which foxglove proves most beneficial are those in which there is much arterial excitement; but as this is *not generally present*, we fear the remedy will *not* be found *generally useful*. In our own experience we have found indigo one of the most satisfactory specifics; but it, like all other remedies in this disease, occasionally proves of no avail, either as a curative or palliative agent.

The following, among other authors, have written on the employment of foxglove in epilepsy: Dr. Percival, in a paper on Turpentine in Epilepsy, (Edin. Med. and Surg. Journal, vol.9, 1815, p. 271-276);

Mr. Roger W. Scott, (Edin. Med. and Surg. Journal, vol. 27, 1827, pp. 19-29;) Dr. Currie (Memoirs of the Medical Society of London, vol. 4).]

ART. 5.—*On Headache, accompanied by Alkaline Urine.* [Dr. Shearman describes this species of headache in the following words]:

Another malady of not unfrequent occurrence, may be allowed to be mentioned here: a peculiar form of *headache*, accompanied with alkaline urine, of the specific gravity of from 1,015 to 1,030, depositing *triple phosphates* and *phosphate of lime;* with a *deficiency of urea.* The headache is described as a dull weary pain, affecting the memory and imagination; there is uneasy sleep, often conjuring up unusual sensations and ideas. The appetite continues good; bowels regular; tongue clean; pulse quick and often feeble; but a great feeling of debility attends this form of headache.

I imagine, in this disease, that there is *just sufficient urea circulating in the blood to derange the brain*, and that this is the *sole cause* of the *headache;* for as soon as the kidneys return to health, and separate the whole of the urea from the blood, *the pain ceases.*

Instead of giving purgatives, using local bleeding, and blistering the back of the neck, &c., I think the best mode of treating this affection is to give animal food, good sound porter, light tonics, with nitric and muriatic acid; merely attending to the secretions and excretions, without using any decided alterative course of medicine. I have met with several such cases which have soon yielded to this simple mode of treatment, and I think this is the class of headaches, cases of which are sometimes quickly cured by tonics and stimulants, prescribed at random, after the failure of an antiphlogistic mode of treatment.

Provincial Med. and Surg. Journal, Aug. 19.

SECT. II. DISEASES OF THE RESPIRATORY SYSTEM.

ART. 6.—*On Œdema of the Glottis.*

By M. De LESIAUVE, Physician to the Bicêtre.

(*Annales de Chirurgie.* Nov. 6th, 1844, and March 1845.)

[Laryngitis œdematosa, commonly known under the name of "œdema of the glottis," consists in the infiltration of serous or sero-purulent fluid in the submucous tissue of the larynx. The disease occupies especially the borders of the glottis, and the fold of the membrane covering the arytenoid cartilages, in which situation the cellular tissue is more than ordinarily lax. It was known to the ancients, and is described by both Hippocrates, and Aretæus; in later times it has occupied the attention of Bayle, Bouillaud, Cruveilhier, &c. Bayle distinguishes two forms of œdema of the glottis, one idiopathic and

arising spontaneously, the other consecutive, and subordinate to some other laryngeal affection.

M. Bouillaud denies the existence of the idiopathic form, and regards the disease in all cases as distinctly inflammatory. MM. Legroux, Trousseau, and Belloe* partake of the same opinion, and believe that idiopathic œdema of the glottis is an exceedingly rare affection.

Cruveilhier is still more exclusive, and rejecting the term œdema of the glottis, he describes the malady under the name of "sub-mucous laryngitis." MM. Bricheteau and Vidal (de Cassis), and, in fact, the majority of the pathologists of the present day, regard the disease in the same point of view, affirming that it depends in all cases upon inflammation, either primary or consecutive.

The author regards the œdema as unconnected necessarily with inflammation, and, therefore, subscribes to the opinion of Bayle, that there is one form of the disease which is idiopathic, and independent of inflammatory action. He treats of the causes of the affection in the following order]:

Predisposing causes. 1st. *Age.* With the exception of two cases, one of which was 8 years, and the other 7½ years old; all the instances occurring in the author's practice were adults. The majority were between the ages of 18 and 54.—2d. *Sex.* Lisfranc affirms that females are more liable to this disease than males. The author's observations falsify this: of 35 cases, 22 were men and 13 females.—3d. *Employment.* This is mentioned in 28 cases; among these sedentary occupations predominated; they were as follows: tailors, 1; shoemakers, 2; cook, 1; washerwomen, 2; sempstresses, 2; porter, 1; soldiers, 3; students, 2; labourer, 1; stone-mason, carter, and lawyer, each 1; and lastly, hospital nurse, 1.—4th. *Season.* The influence of season is difficult to determine; notes of this were taken in only 23 cases; of these, 3 occurred in January; 1 in February; 1 in March; 3 in May; 3 in June; 2 in July; 2 in August; 3 in November; and 3 in December.—5th. *Prior disease.* A previously deranged state of health is a marked predisposing cause of this disease. Of 37 cases, 34 occurred in the course of other ailments. Of these, 7 occurred during continued fever; 2 in bronchitis; 2 towards the close of cardiac disease, with general dropsy; 2 during the desquamation of scarlatina; 2 in articular rheumatism; 1 after confinement; 1 as a consequence of severe uterine disturbance; 9 were the subjects of habitual cough; 3 were syphilitic; and lastly, in 2 there was considerable swelling and disorganization of the larynx and neighbouring structures.

Exciting causes. Cold is, according to all writers, the most frequent exciting cause. Of 8 cases in which the circumstance was mentioned, this agent was accused in 6. M. Lisfranc places the abuse of mercury among the causes of the disease. In one of the author's cases the affection appeared to be induced by mercurial fumigations.

Progress of the disease. The duration of œdema of the glottis is indeterminate; generally, however, it proves fatal within the first

* Mémoires de l'Académ. Royale de Médecine, t. vii., p. 1.

week, unless the means employed are successful. The invasion may be sudden, but usually the access of suffocative dyspnœa does not occur until some time after the patient has complained of pain in the region of the larynx. The attacks of dyspnœa are very variable, both in severity and in the period of their occurrence; in some cases the paroxysm lasts five or six minutes, or even longer. As the fatal termination approaches, the duration of the paroxysms increases, and they become more violent. Symptoms then arise which indicate imperfect aeration of the blood, and the patient dies asphyxiated. In favorable cases the intervals between the paroxysms of dyspnœa gradually become longer, and in some instances a crisis puts an end to all danger.

Symptoms. The symptoms chiefly arise out of the obstruction to respiration; it is seldom that fever either precedes or accompanies the disease. 1st. *Pain.* The first symptom is generally pain of variable character; the patient has the sensations of a foreign body in the larynx, which he endeavours to dislodge by violent expiratory efforts. —2d. *Cough.* To the pain is added generally, but not universally, cough. This is generally short and dry.—3d. *Alteration of the voice.* This is one of the most remarkable of the symptoms. It becomes hoarse, stifled, and gradually more and more feeble, a phenomenon which depends not merely upon a narrowing of the laryngeal canal, but upon the loss of elasticity in the tumified parts.—4th. *Respiration* becomes more and more short and hurried, especially in the night; at length suffocative dyspnœa, with paroxysms, occurs; as was remarked by Bayle, although inspiration is difficult, expiration is comparatively easy.—5th. *Deglutition.* This function is in general unaffected; sometimes, however, it is painful, but in such cases there is usually an extension of inflammation to the pharynx.—6th. *Expectoration.* This symptom has attracted but little observation, the secretion being for the most part scanty, and easily expelled.

[With this brief account of the symptoms of the disease, the author passes on to the consideration of the anatomical appearances. Bayle has remarked the persistence of the animal heat long after death, as a phenomenon coincident with the fluidity of the blood contained in the large vessels. The same phenomenon has been noticed by the author, but he does not venture upon an explanation of it.] The œdematous infiltration, sometimes appears in the form of a round, shining, pellucid ring, which may be either tense or flaccid, and somewhat gelatiniform. The contained fluid differs considerably in different cases. It is seldom found to be clear and serous, but most commonly consists of plastic lymph, which cannot be expelled without great difficulty. The seat of the infiltration is in those parts in particular which are below the rima glottidis, such as the chordæ vocales, the arytenoidean folds. The effusion is not, however, in all cases limited to these parts, but may extend both above and below. Thus the epiglottis on the one hand, and the mucous membrane of the upper part of the trachea on the other, may be implicated in the disease.

Independently of these lesions, which are peculiar to the disease in question, there are others which are in a measure the effects of the malady rather than of necessity connected with it. Such are the

vascular injections and the ulcerations situated on the surface of the epiglottis; the erosions, ossifications, and caries of the cartilages; the abscesses, vegetations, &c., often found upon the cordæ vocales; and lastly the purulent and gangrenous deposits which are sometimes discovered among the muscles external to the larynx.

Diagnosis. As the author observes, the differential diagnosis of œdema of the glottis is a point of great importance. The affections most likely to be confounded with it are acute laryngitis, croup, laryngeal phthisis, syphilitic vegetations, polypus of the larynx; aneurism of the aorta, tumours situated in the course of the trachea, enlargement of the thymus (?) and retro-pharyngeal abscess. In addition to these, Bayle enumerates angina pectoris, and the crowing respiration of infants.—1. Acute laryngitis, and angina œdematosa, are thus distinguished by the author. The pain in the former is severe and tearing; that of the latter is less acute, and is rather an inconvenience than actual pain; in laryngitis the expiration remains free, and those accesses of suffocation so common in the œdematous form, are not observed excepting in some few cases of unusual severity. The fever, moreover, precedes and accompanies the former, but is seldom observed in uncomplicated œdema glottidis.—2. Croup is a disease of infancy. Angina œdematosa, on the contrary, is rare at this period of life. In the former, the cough is harsh and ringing, the voice peculiar, the respiration whistling; in the latter, cough is not frequent, the voice hoarse and almost extinct, the inspirations are more convulsive, and less sonorous.—3. It is not easy to confound laryngeal phthisis, with œdema of the glottis; the voice is hoarse and feeble in both, but in phthisis these paroxysms of suffocative dyspnœa which mark the latter disease, are not observed.—4. Venereal affections of the throat may be recognized by their being in general accompanied by other syphilitic symptoms, as blotches, nocturnal pains, &c.—5. Polypi of the larynx are not common, but when they do occur, are difficult of diagnosis. In some cases, their true nature cannot be ascertained until after death. The same may be said of laryngeal vegetations.—6. Foreign bodies in the larynx are generally the result of an accident, the occurrence of which may be clearly ascertained; if it were not so, the violent irritation which they produce, the sensation of a body moving up and down the trachea, the constant sensation of imminent suffocation, sufficiently mark the true nature of the case.—7. Retro-pharyngeal abscess may readily be mistaken for œdema of the glottis, there is, however, one sign, namely difficulty of swallowing, which will serve to distinguish the two affections. All doubt may in general be removed by careful examination of the pharynx by the finger, when the site of the abscess will be clearly ascertained.—8. The convulsive asthma of infants offers considerable analogy to the disease in question, but a mistake may be avoided by the consideration that œdema of the glottis is not a disease of infancy, and that the spasmodic asthma has periods of perfect remission, which is not the case with the former disease.

Prognosis. Œdema of the glottis is a severe disease, but not an inevitably fatal one. The author saved fourteen cases out of forty-eight. The disease is more to be dreaded in proportion as the patient is de-

bilitated, either by the disease, or by previous circumstances. The occurrence of inflammation is a severe complication.

Treatment. In the treatment of this disease, the author recognizes two periods, one in which the chances of cure are not remote, the other in which the disease must inevitably prove fatal, unless certain extreme measures are adopted. In the first period, the remedies most commonly employed, are bloodletting, emetics, purgatives, opiates, astringent gargles, &c. The author places but little confidence in bleeding, as might be expected from the foregoing views of the pathology of the disease; in this he differs from the majority of writers. Emetics are highly prized by him, as also are opiates; he also places great confidence in the production of ptyalism, by means of stimulating gargles. The action of mercury is considered by him to be too slow. The author refers also in favorable terms, to scarification of the œdematous ring, which is seen to surround the glottis, and cites the authority of M. Lisfranc in its support. The latter surgeon by this means cured six out of seven, in which it was adopted. The mode of performing the operation is as follows: "The jaws being kept apart by a suitable contrivance, a curved bistoury guarded to within a line of its point by lint, is guided to the part by the two fingers of the left hand, and a few distant scarifications are made."

The second period of the disease above alluded to, that in which all less hazardous remedies have failed, calls for the performance of the operation of tracheotomy. In order, however, that the operation should be successful, the author reasonably exclaims against its being delayed until death by asphyxia is imminent. The mode of operation preferred by the author, is the division of the crico-thyroid membrane, because by choosing this spot, we not only admit of the patient's respiring, but we are able at any subsequent time, as was pointed out by Vidal (de Cassis) to scarify the diseased parts by passing the bistoury upwards.

[The same disease has been lately made the subject of a memoir presented to the Academy of Medicine by M. Valleix. The following remarks upon prognosis, appear to us to be exceedingly judicious:]

"In pronouncing upon the degree of gravity from the symptoms observed, each case must furnish its own elements for decision. In a general manner we can only say, that if the strength yet continues, the pulse is regular and not deficient in power, if the features are not much changed, and the face is not livid; if the efforts to inspire are as yet energetic, and if the wheezing or other noise is heard in the larynx, with sufficient power to show that the air penetrates the lungs, we may have hopes that the disease will terminate favorably. If on the other hand, the patient is prostrated; if his features are changed, his lips blue, his eyes haggard, his face cadaveric, if he has no longer the power to make effective respiratory efforts, if the inspiratory '*sifflement*' have lost its energy, without respiration becoming deeper and easier, we must not allow an apparent calm to deceive us, for the patient is devoted to a speedy death."

Notice in Medico-Chirurgical Review, July 1845.

ART. 7.—*On the Differential Diagnosis of Pneumonia.* By M. ROSTAN.

(*Gazette des Hopitaux*, No. 65.)

"Inflammation of the parenchymatous structure of the lungs may attack indifferently any portion of those organs. In the onset of the disease, their density is not materially altered, but their tissue is seen to be red and injected. If the thorax be percussed in this stage of the malady, no difference will be perceived in the sound as it occurs in a perfectly healthy person. As the disease progresses, however, very important alterations take place in this respect; the sound becomes dull, but not to the extent to which it arrives in pleuritic effusion. If the lung should subsequently pass into the condition known as "gray hepatization, the dullness of the sound is still further increased."

"The natural sound produced by the entrance of air into the lungs, need not be here insisted upon, as it is perfectly well known, we shall therefore pass on to consider the changes which it undergoes in pneumonia, and to contrast it with those of other affections for which the latter disease may be mistaken.

"In pleurodynia, the respiratory murmur is not different from that of health. Neither does it undergo any change in the early stage of pleurisy. If, however, effusion have taken place, this sound is no longer normal. It becomes rough, and at length degenerates into the veritable bronchial '*whiff*,' louder in proportion as the effusion is more considerable. We particularly call attention to this point; as this sound has been in general considered as confined to pulmonary hepatization. It is not so however, but as we have stated is also heard in pleuritic effusion. How then are we to distinguish the one case from the other?

"In pneumonia the respiratory murmur is always more or less mixed up with the crepitous râle, a sound which is characteristic of the first period of the disease, and is heard in no other, if we except perhaps the case of simple pulmonary congestion. As the disease advances this râle and the vesicular murmur decrease and finally disappear, and their place is supplied by the tubar or bronchial respiration. The circumstance which distinguishes this form of bronchial respiration from that which depends upon pleuritic effusion is this, that the fine crepitation of the earlier stage of pneumonia may always be heard at a greater or less distance from the spot in which the 'whiff' is produced.

"If the bronchial tubes alone be the seat of the inflammation, the râles produced are subcrepitant, that is, are distinguished by large bubbles instead of the fine crackling of pneumonia; they are at other times hissing or snoring, and are heard both with the inspiration and the expiration.

"The auscultation of the voice gives likewise certain results by which the presence of pneumonia may be detected. It is loud and resounding, as if the patient spoke directly into the ear; this however, is confined to the spot at which the respiration is bronchial. In pleuritic effusion the voice is also louder than natural, but it has a peculiar tremulous intonation whence it has been termed œgophony, from its re-

semblance to the bleat of a goat. We must allow, however, that this latter sound is not to be depended upon as diagnostic between pleuritic effusion and hepatization of the lung, for the voice has occasionally the trembling character in the latter.

"Independently of auscultation, some importance in diagnosis is to be received from a consideration of the general symptoms, as the state of the pulse, heat of skin. The latter sign is one of considerable import, for although it accompanies all forms of inflammation, it is remarkably pronounced in inflammation of the substance of the lung. The tongue is generally white and furred, with a red point, and the urine high coloured.

"In pleurodynia, although the pain is very acute, the system does not sympathise, the pulse remains quiet, and there is no febrile disturbance.

"In pleurisy with effusion, the general symptoms appear to be in inverse ratio with the local mischief, a circumstance which is almost peculiar to that disease. From this fact alone, we have frequently been able without the aid of auscultation, to determine between dullness on percussion arising from effusion, and that depending upon pulmonary hepatization."

ART. 8.—*On the Iodide of Potassium in Pneumonia.* By GEORGE L. UPSHER, M.D., Norfolk, Virginia.

(*Philadelphia Medical Examiner.*)

[In our First Volume (*art.* 17, *p.* 25,) we have briefly noticed Dr. Upsher's earlier experience of the powers of the above medicine; the article which we here reproduce, contains a statement of his subsequent experience.]

CASE 1. John Fisher, a lad aged 16, of a delicate frame and lymphatic temperament, previously healthy, after exposure to heavy rain, was seized on the evening of January 8th, 1844, with severe rigors, which were followed by high febrile action, with a hacking cough and sense of tightness across the chest. I saw him at noon next day, when his condition was as follows: passed a restless night; feels much debilitated; lies upon his back with the shoulders raised; respiration 45 per minute, but performed without pain; cheeks flushed, and nostrils dilated; pulse 120, soft and full; skin hot and dry; bowels disposed to looseness; cough very troublesome, and expectoration consists of tenacious mucus; much thirst; appetite impaired, and countenance anxious. Physical examination of the chest gave dull percussion over the lower lobe of the right lung posteriorly, with very distinct crepitant rhonchus, and an expiratory sound. The percussion over the left lung was clear, and the respiration merely puerile.

Prescription. C. C. posteriorly over the right lung; and one of the following powders every hour: R. calomel, gr. x; pulv. ipecac. gr. v. M. div. in chartulas viii.

Jan. 10th. More dyspnœa; inclined to sleep, but is prevented by the cough; expectoration to day exhibits some rusty streaks; respiration 47 per minute; pulse 112 and jerking; tongue dry with a dark

coating posteriorly; not as much thirst as yesterday; bowels were acted on four times in the night; complains of no pain, but when questioned, says he "feels very sick." Physical signs as yesterday, except that the expiratory sound in the lower lobe of the right lung is more distinct. Prescribed ant. potass. tart. gr. ij, tr. opii. camph. f. dr. ij, aquæ f. oz. iv. M. A tablespoonful every two hours. In the evening there was an exacerbation of fever, and the solution having excited vomiting, was given in half the original dose.

On the 11th, the patient's condition was little altered. The tartar emetic was disposed to run off by the bowels, and therefore was discontinued for the present, and the chloride of mercury, in doses of one grain every hour, was substituted in its stead. The sputa were more *rusty*, and in the diseased lung the crepitant rhonchus had almost entirely disappeared, while the blowing respiration was heard very distinctly.

During the five days following, the condition of the patient was not materially altered, and the treatment consisted in the cautious administration of the tarter emetic, alternated with mercurials. On the 17th, the pulse was only 103 per minute, and extremely feeble; the respiration 30, and performed with difficulty; the cough troublesome, and expectoration, consisting of pus, sometimes marked with bloody striæ, was very abundant. In addition to the dull percussion and bronchial respiration, there was now and then heard a crackling sound, as if the air was forced through a tenacious fluid. *Prescription.* Emp. canth. 4 in., by. 6 in., posteriorly to the right side. M. Potassii iodidi scr. j, infus. humuli f. oz. viij. M. A wineglassful every eight hours.

On the 18th, he was yet more feeble; pulse as yesterday, but with less volume; tongue dry, and covered with a brown crust; the blister, which remained on eight hours, drew but little; dyspnœa so great as to oblige him to be propped up with pillows; bowels very loose, the evacuations being watery. Ordered wine-whey, tincture of kino in doses of thirty drops every half hour, until the alvine evacuations ceased; continue iodide of potassium.

19th. Rested well last night; cough troublesome only at times; feels stronger and desires something to eat; pulse 95, soft and fuller than yesterday; respiration 25, but accompanied with some dyspnœa; one evacuation from the bowels during the night; percussion still very dull, and respiration bronchial, with harsh submucous rhonchus. Took about two ounces of wine-whey, and one and a half drachm of the tincture of kino. Continue the iodide of potassium in doses of gr. v, every six hours, administered in f. oz. ij, of infusion of hops.

On the 20th, the patient was decidedly better, and, it might be said, was on the verge of convalescence. On the 21st, private business called me from the city, and I requested my friend Dr. W. J. Moore, to attend the case for me. He continued the use of the iodide of potassium in the same doses as I had prescribed it, and the patient convalesced so rapidly, that he considered further attendance useless, after paying the fifth visit.

Case 2. Mrs. M., aged 30, the mother of three children, and a woman of a vigorous constitution, was taken ill on the 22d of Feb. 1844, with ague, followed by fever. Thinking her disease only a

slight catarrh, she did not send for me until the 26th, when I found her labouring under high febrile excitement, cough and dyspnœa. Upon examining the chest, I detected crepitant rhonchus diffused through the lower lobe of the left lung. The percussion there was but little duller than natural, and the expiratory sound scarcely discernible. Her bowels were constipated; skin moist; anorexia complete; expectoration scanty; some headache; decubitus on the back. The pulse was 110 per minute, small and compressible; the respiratory act was so interrupted by the cough, that the number of respirations per minute could not be accurately determined; the average, however, amounted to about 35. Ordered cupping to the left side posteriorly, and one of the following pills every hour: ℞. Calomel gr. x, tartar emet. gr. iss, syr. simp. q. s. M. div. in pil. viii.

27th. No material change. 28th. On this day the patient became worse, complaining of a heaviness in the præcordial region, and difficulty of drawing her breath. The action of the heart was diffused and laboured, giving the pulse at the wrist an intermittent character. Upon applying the ear to the breast, an intense "bellows-sound" was heard. The respiration in the diseased portion of the left lung was decidedly bronchial, and the percussion dull. It will be perceived from these symptoms that the pneumonia had passed from the first into the second stage, and also had become complicated with endocarditis, a complication not uncommon in pneumonia, and the intensity of which often marks entirely the original disease. *Prescription.* Cupping to the præcordia. R. Potass. nitrat. gr. xl, tinct. digitalis gtt. xlv; aquæ f. oz. iv. M. A tablespoonful every two hours.

This mixture was exhibited, with now and then an intermission, until March 2d, when it was entirely discontinued, and cupping-glasses were again applied to the region of the heart. The action of the heart was more regular than on the day the cups were first applied, but the "bellows-sound" still existed. There was no alteration in the inflamed lung, though the dyspnœa was not so urgent, nor the cough so harassing. The sputa were transparent, and so viscid that they would cling to the bottom of the vessel when it was turned down. Pulse 100, feeble; mouth dry, and tongue coated with a dark fur; patient somewhat deaf and very drowsy; bowels constipated; blisters applied to the ancles, and one drop of oleum tiglii given internally. March 3d. Croton oil acted copiously, and the cantharides plasters vesicated well, which relieved the drowsiness entirely, and the patient says she feels more comfortable than usual. On the 4th, there was a sudden change in her condition. She was extremely feeble; pulse soft, irritable, almost fluttering; respiration obstructed, and in the left lung, lower lobe, a harsh mucous rhonchus, accompanying the bronchial respiration; cough very frequent, and expectoration abundantly purulent. I ordered a decoction of senega, and infusion of serpentaria combined and exhibited in doses of a wineglassful every hour. Under this treatment the patient rallied, and continued to expectorate with considerable ease until about noon on the 5th, when the influence of the remedy seemed to be lost, and the depression of the vital powers again approaching. Wine-whey was now exhibited, but it only accelerated the pulse, without adding to its volume, or increasing the patient's strength. As a

dernier resort, I now prescribed the iodide of potassium, in the same dose, and in the same manner as prescribed in the case of John Fisher, detailed above. In twenty-four hours from this time there was an evident improvement in the condition of the patient. She was stronger; the pulse was fuller and stronger, and the expectoration much more easily performed. This treatment was continued, and the appetite returning in three or four days, a nourishing diet was directed to be taken, and the patient was perfectly well on the 17th of March, with the exception of slight cough, and a roughness of the first sound of the heart. The roughness still exists, after the lapse of more than a year, and as it is probably dependent upon thickening of the aortic semilunar valves, it may remain for some time to come. The patient, however, in other respects has enjoyed perfect good health up to this time.

Case 3. The subject of this case is Mrs. B— who was taken ill about the middle of April 1844, but owing to my absence from the city at that time, I did not see her until the 25th. From the account she gave of her situation, she had been labouring under pneumonia of the lower lobe of the right lung, which was ushered in by the usual symptoms of chill, fever, cough, and oppression of respiration. She had taken only a cathartic of senna and manna, and had drunk copiously of flaxseed tea. The following were her symptoms at my first visit. Pulse 95, and feeble; respiration somewhat difficult; expectoration abundant, and consists of pus floating in a glairy mucus; no appetite; bowels opened regularly once a day. *Physical signs.* Percussion clear throughout both lungs, except over the lower lobe of the right, where it is perfectly flat. Respiration over this lobe intensely bronchial, with crackling and submucous rhonchus. I ordered a blister to the diseased portion of the right lung, and the iodide of potassium internally, as I had heretofore prescribed it. It is useless to pursue the details of the case further. Suffice it to say, that every symptom of disease was rapidly ameliorated, and the patient in ten days returned to her household duties. She has been perfectly well since that time.

Remarks. As stated in my first communication on this subject, I do not attempt to explain the *rationale* of this mode of treating the suppurative stage of pneumonia. It suggested itself, in the first instance, when every other treatment had proved abortive; and its prompt beneficial effect, in that case, recommended it in the management of similar cases which subsequently came under my notice. Iodine is certainly more rapidly alterative than any other therapeutic agent, and in addition to its alterative action, the experiments of Jörg, according to Dr. Dunglison, go to establish the fact, that it produces a decidedly stimulant effect upon the respiratory organs. This stimulant impression is much needed in the suppurative stage of pneumonia, a period which is usually characterized by subsidence of inflammatory action, and great debility of the respiratory function. Lugol and Eager both observed, that the appetite and nutrition both rapidly improved under the use of iodine and its preparations, an effect which is greatly to be desired towards the termination of so acute an affection as pneumonia. To conclude: if I were disposed to hazard a conjecture upon the *ratio*

medendi of the iodide of potassium, when administered in the third stage of pneumonia, I should say: 1, that it tends to promote the absorption of the coagulable lymph effused into the parenchyma of the lungs during the second stage, the breaking-down of which lymph into pus serves to keep up the harassing cough and hectic irritability of the third stage, both of which are so often prolonged for a considerable time after all inflammatory action has ceased. 2d. That it is directly stimulant to the lungs at a time when they most need a stimulus. And 3dly, that it invigorates the digestion, and promotes nutrition, thereby rapidly restoring the enfeebled frame to the normal condition of health.

ART. 9.—*On a New Diagnostic Sign in Phthisis Pulmonalis.* By C. M. LATHAM, M.D., Fellow of the Royal College of Physicians, &c.*

[The following remarks are extracted from the third lecture upon *Subjects connected with Clinical Medicine*, the first volume of which has recently appeared. The physical sign alluded to is thus described:]

"I must here find a place for noting a certain auscultatory phenomenon, which though it may not have struck the general observation, is frequent and familiar to my own, and has gained an importance in my eyes, from the pathological conditions with which I have found it associated. To the ear it claims kindred with endocardial murmurs, but although the heart may be instrumental in producing it, it is not at all perceived in the præcordial region, but in a certain definite and circumscribed space beyond it.

Fancy a line drawn from the left side of the sternum along the upper edge of the second costal cartilage, and continued an inch along the second rib; and another line drawn from the sternum along the lower edge of the third costal cartilage, and continued an inch along the third rib. Between these two lines a space is included, in the whole or part of which a murmur is often audible, coincidently with the systole of the heart, when no such murmur can be perceived either in the præcordial region, or in the course of the aorta, or in the carotids, or in any part of the arterial system, but here and here only. It is a gentle bellows-murmur, quite obvious to the ear, and unmistakeable in its character.

Of such a murmur, often heard in this situation exclusively, I am certain as a matter of fact, and certain too of its very remarkable accompaniments. I have witnessed it either in those who were undeniably consumptive, or in those who were too justly suspected of being so. I cannot say in what proportion of the phthisical it occurs, but I am continually meeting with it.

[The author further states that his knowledge of this symptom is entirely clinical; he has had no light thrown upon it by dissection. He does not hesitate, however, to look upon it as a strong confirmatory sign of phthisis in otherwise doubtful cases. p. 64.]

* Lectures on Subjects connected with Clinical Medicine, vol. i.

SECT. III. DISEASES OF THE CIRCULATORY SYSTEM.

ART. 10.—*On some forms of Functional Disorders of the Heart.* By D. J. CORRIGAN, M.D., Lecturer in the Dublin School of Medicine.

(*Medical Times*, July 1845.)

[The first form of functional disorder of the heart, noticed by the lecturer, is one of every day occurrence, and is known under the name of "chlorotic palpitation." It is thus described:]

"A patient who has been for some time affected with chlorosis, presents herself to you labouring under the following symptoms. Anæmia, characterized by the bloodless, tallowy appearance of the surface of the body; cough, oppressed breathing, dyspnœa, emaciation, loss of muscular strength, anasarcous feet, and effusion perhaps into the cellular tissue of the body. To these symptoms, alarming enough in themselves, are added palpitation of the heart, and bruit de soufflet. Here we have a train of symptoms alarming enough to induce us to suppose our patient labouring under organic disease of the heart. We find these palpitations increased on taking exercise, and sometimes accompanied by pain in the region of the heart. Have we any characteristic mark by which we can distinguish whether the above train of symptoms denotes organic disease of the heart or not? Yes. Although the other signs might readily deceive us as to its existence, yet by carefully examining the bruit, we can from it discover a means of arriving at the wished-for conclusion. The bruit, from the peculiarity of its sound, in these cases has been by the French writers termed *bruit de diable*. The sound closely resembles that produced by the schoolboy-toy (with which I am sure you are all familiar,) made of a piece of iron, or stiff leather, nicked at the edge, and strung on a cord by a hole through its centre. This, on being twirled through the air pretty briskly, produces a peculiar sound. The bruit here differs from that in organic disease in the following particular: in organic affection the beats of the pulse being 50, 60, 70, 80, or 90 in a minute, the number of times bruit is heard, will tally exactly with this, except in cases of permanent patency of the aorta, when the sound of the returning portion of blood causes double bruit. In chlorotic palpitation, no matter what the number of palpitations may be, the bruit does not correspond with them. You cannot count the number of times in which you hear bruit de soufflet in this affection. There it goes on continuously, whirring away for one half, one, two, three, or ten seconds; there is no intermission in it as in organic disease; *it may hold on thus for half a minute or a minute, but during this time there is no cessation.* In this distinction we possess a never-failing criterion between functional disorder and organic disease of the heart. In the chlorotic bruit de soufflet you can hear this sound also in the internal jugular vein, when the stethoscope is applied to the neck, this sound proceeding here from exactly similar physical causes as those which I have detailed in the lecture explanatory of the

causes which operate in producing bruit de soufflet. In the disease before us we have the physical cause acting in full force, which is absolutely essential in producing this sound, namely, an incomplete distension of the large vessels with blood, owing to the deficient supply of it in the system. But you must bear in mind, that in a person of perfectly sound heart, and enjoying excellent health, you may have bruit de soufflet present, from some cause or other, of only momentary duration.

The treatment of this chlorotic palpitation may be divided under two heads: 1. To remove the constipated state of the bowels which always exists here, by means of purgative medicines, which are supposed to exert some specific stimulus on the uterus; of this class I think aloes the most preferable. 2. To improve the general state of health by the administration of a full diet of animal food, a moderate allowance of fermented liquors, by taking a sufficiency of exercise; walking, if possible, is to be preferred; and by the use of medicines, which are supposed to possess the property of promoting materially the formation of red blood, chalybeates, for instance. By the use of these, and all other means which may suggest themselves to you, as being useful in raising the debilitated system to a proper degree of vigour and to the highest possible tone, you will, in the majority of instances, quickly and effectually restore your patients to health.

There is another variety of functional disorder of the heart, consisting solely of palpitation, without any other irregularity of this organ, which we find attacking females, about or at the period of puberty, say from fourteen to sixteen, and in some instances continuing until the persons so attacked have attained the age of thirty or thirty-five. The state of the catamenia here has no influence in producing this complaint, for we meet it in persons where this secretion is regular, irregular, wholly defective, or, on the contrary, morbidly profuse, and we often meet it coexisting with leucorrhœa. It may attack males as well as females, but the latter principally, particularly such of them as have given themselves the custom of wearing tightly laced stays, and it is often met with in persons who have naturally narrow chests. In these cases the heart may be felt beating violently, and over a large extent of surface, sometimes accompanied by pain. In no case, no matter how violent the palpitation may be, is there any abnormal sound heard. The palpitation is much increased whenever the patient takes much pedestrian exercise, though (and the fact which I am about to mention is curious) if the person has been accustomed to horse exercise she can take any amount of it without feeling any inconvenience from palpitation. We often find persons who, having been delicate in early life, and subject to this affection, on being surrounded by a numerous family in after life, tell us that they have outgrown their disorder, have become stronger than it, and that they are no longer troubled with it. A curious circumstance connected with the pulse occurs in this affection. *If the pulse (as most often happens in it) be irregular and intermittent during the prevalence of the disorder, it still continues so after the complaint has disappeared, and will continue too, irregular and intermittent, during the patient's lifetime.* If unacquainted with this fact, we

might be led to infer, from the irregularity and intermission of the pulse in persons otherwise healthy-looking, the speedy accession, or even the presence of some severe disease of the heart. We frequently find this state of the pulse in delicate young females labouring under the affection of the heart in question, joined with pain of the left side, frequently extending towards the right. The existence of this pain makes them uneasy, fearing from its situation some fatal disease of the heart, and I have not unfrequently seen *the whole train of symptoms* treated by medical men as incipient pericarditis. Such an opinion is groundless, and one likely to lead to some aggravation of the functional disorder already existing. We often find this affection dependent upon spinal irritation, and the part of the column which is generally affected is the first or second, or sometimes the last of the dorsal vertebræ.

This cause of the disease is frequently overlooked both by patient and physician in their anxiety about the palpitation, until evident symptoms of spinal disease show themselves either in the usual form of curvature where the body is bent forward, or in the more severe and unmanageable form, called by the French "syphosis," when the curve is lateral and angular.

In cases where this affection depends on spinal irritation, we must immediately have recourse to the means best calculated to subdue this. For this purpose, the first step should be topical bleeding, from whatever situation the spinal irritation may occupy. This we can determine by pressure along the spinous processes of the vertebræ. After this topical bleeding by leeches or cupping, we must direct the use of counter-irritation over the seat of disease. I do not know a better remedy for this purpose than the tartar-emetic ointment rubbed in every morning and night until it produces pustulation. Along with these radical means of cure we shall derive very great advantage in controlling the distressing palpitations by the use of prussic acid or laurel water in half drachm doses three times a day. Observing to follow up this line of treatment, we shall have the gratification of finding the heart symptoms disappear, according as the primary exciting cause is removed. In the cases which do not depend upon spinal irritation, we shall find our best account in a tonic plan of treatment, supporting the strength by every means in our power, and by keeping the digestive organs in proper order.

You will take care to keep in mind the difference between these last two disorders. The former arises generally in persons at an early period of sexual life, and is attended by a suppression of the catamenia; the latter arising too generally speaking, at an early period of sexual life, but completely independent of any connexion with the state of the catamenial secretion, which may or may not be healthy or morbidly profuse; the one attended with peculiar bruit de soufflet, the other unattended by any abnormal sound of the heart, but both coinciding in the material fact of neither proving a source of organic disease to the person affected.

[In a subsequent lecture, some other forms of functional disorder are thus considered:]

I have next to direct your attention to another functional disorder of the heart, arising in persons who have led dissolute, intemperate lives. In such persons the complaint commences with palpitations, which are excessively troblesome, and annoy the patient to such an extent as to induce a fear that organic disease of the heart may be present, and which may prove quickly fatal. The action of the heart is violently strong and tumultuous, and is often accompanied with pain shooting down the left arm as far as the elbow: these palpitations are much increased when he walks or takes exercise, if at all of a violent nature. In this state he is miserable, dreading nothing so much as instantaneous death at some period (of course) unforeseen by him; yet, with all these complaints, when you examine the heart you find its sounds natural. The tongue, in this disease, presents an appearance which you could not *à priori* conjecture; on examination, its sides, tip, and dorsum present a red and glazed appearance, indicative, in some degree, of subacute gastric inflammation. In this disease, the stomach acquires the power of secreting air, which often takes place to an enormous extent; and if we press upon it towards its great arch, we shall find it somewhat elastic, and if we apply the stethoscope in this situation, we shall find the stomach tympanitic, and the sounds of the heart in this region become preternaturally clear and distinct. The reason of this is obvious. The stomach, being enormously distended with its gaseous secretion, irritates the heart, and throws it into irregular action, while the sounds of the organ are transmitted with preternatural distinctness through a medium so well adapted for their conveyance as the air, which is secreted by the stomach in its present disordered state. I have seen this form of functional heart disease, as I haver emarked already, in persons who have led dissolute intemperate lives, addicted to excesses of every kind. I have seen more of it, however, in those persons who have returned from the civil wars in Spain than among any other class. I think that their mode of living while in Spain accounts satisfactorily for its very great prevalence among them. They were persons who, for the most part, were deprived, in a great measure, of a due supply of wholesome food; but who, in order to make up the deficiency, addicted themselves to the intemperate use of stimulants of every class, such as green tea, tobacco, and, last not least, to the use of those which the country itself supplies with such lavish profusion, wine and brandy. Here we have all the causes necessary to produce gastric inflammation, and it is this which is the root of the disease.

We shall find the appearance of the tongue of material benefit to us in pointing out the treatment to be adopted, which is nothing more than the removal of the gastric inflammation which exists in a sub-acute form. In our treatment of this affection, our first step should be the application of counter-irritation over the epigastrium, and this continued, too, for a considerable time. For this purpose, I generally prescribe the croton-oil liniment, made with a drachm of the oil to an ounce of spirit of turpentine, or compound camphor liniment. This is to be rubbed in every morning and night until pustulation is produced. Along with this topical treatment, I am in the habit of pre-

scribing oxide of bismuth, in conjunction with bicarbonate of soda, or, better still, a combination of these two with the saccharine carbonate of iron in the following proportions:

R. Sodæ bicarbon. gr. x, Bismuth. trisnitrat., Ferri c. saccharo āā. gr. viij, pro pulvere, ter in die sumendo.

This must be persevered in for some time, until the tongue becomes improved in appearance, the stomach loses its power of gaseous secretion, and the patient no longer complains of palpitation or any other irregularity of the heart. It will be needless for me to mention that, in addition to these means of cure, you must prohibit your patient most strictly from the use of tea and all other stimulants. Let his diet be one of a nutritious, non-stimulating character, containing animal food in quantity and quality suited to his enfeebled digestive powers.

I have next to call your attention to another functional affection of the heart, which, in some papers published in the *Dublin Journal*, I have called EPILEPTIC PALPITATION, and which, strange as it may appear, is always caused by disease of the brain. It seems strange that an affection of the brain could cause palpitation of the heart, but, though strange, it is nevertheless true. You will be consulted by a young man, or by one probably in the prime of life, who will tell you that he has been attacked by palpitations for some time past, which render him uneasy, anxious, and uncomfortable, and that they come on him when he takes exercise, or is at all agitated. These palpitations frighten him very much, but when you examine the heart you find its sounds perfectly normal. On questioning him as to the first occurrence of this irregular action of the heart, he will tell you, perhaps, that some short time ago he was attacked with a fainting fit, which he says has recurred since, and that, after the first attack of syncope, the palpitations began to annoy him. This is what the older writers termed epilepsia silens,—silent epilepsy. About the fainting fits themselves, the patient has not the least concern; he fears only for the palpitation, and to this he directs your attention exclusively. These fainting fits, if allowed to proceed unchecked, will terminate, perhaps in a very short time, in well-marked and regular epilepsy. However, they may run on for a period of two years before the disease perfectly shows itself. Your attention will be awakened here by finding the fainting fits coming on at a period of life when they should be naturally absent, from the vigour which the constitution enjoys. You will, therefore, proceed to inquire from what cause it is that they arise. The heart, as I have said before, is perfectly normal in its sound; no disease there; no symptoms of irritation along the vertebral column. Where, then, does the mischief spring from? The head, as I have remarked, is the cause of these alarming palpitations, and of those fits of syncope which have preceded the palpitations.

We have now to consider the means best adapted to relieve both the cause and its effects. The medicine which I have found to possess properties the most serviceable and advantageous in arresting this disease is the digitalis purpurea, or foxglove. I have witnessed more benefit in cases of this kind from the use of the digitalis (bleeding from the arm having been in every instance premised) than from any

other remedy or class of remedies which I have seen tried. To produce its beneficial effects here, you must not content yourself with administering it in the small doses of the pharmacologists. The form of the drug which I have found most beneficial is the powder; it must be given in doses of *two or three grains at bed time every night*, and, in some cases, *in five grain doses*, until it exerts its peculiar effects on the constitution. You will, therefore, consider this affection of the heart only as it really is, one of secondary importance; and, in the selection of your remedial measures, you will proceed at once to strike at the root of the evil where it really exists—in the brain; and not until every trace of mischief has vanished from thence, *can* your patient be free from these palpitations, which are to him a source of such needless alarm. Without my having told you, your own common sense would at once have made you acquainted with the propriety of keeping your patient as free as possible from every source of mental irritation, as this has been known to prolong the disease to an extremely protracted period of time.

You will often meet, in persons of sedentary habits, an affection of the heart, consisting of violent palpitations, which, as in all these cases of functional derangement of the heart, give the patient a great deal of unnecessary alarm. There is no abnormal sound here, though the heart may be felt acting with great vigour. If we examine these cases minutely we shall find, in every one of them, evidences of venous congestion; the pulse is full and quick, the eyes are suffused, the patient feels more or less drowsy; there are sometimes a turgescence and lividity of the face, and swelling of the legs, and, occasionally, an inclination to syncope. These signs, if neglected for any period of time, will terminate in an attack of apoplexy, in all probability fatal. It is easy to conceive why, in these cases, the heart should become affected with palpitations, in consequence of the extraordinary quantity of blood thrown upon it by the sedentary habits of the patient; these palpitations being nothing more than the struggles of the overloaded ventricle to discharge completely the quantity of fluid contained within it.

The treatment here is obvious and simple. Take blood from your patient to the extent of eight or ten ounces, so as partially to unload the ventricle; after that give a purgative, so as to unload the alimentary canal; and, in my opinion, you will have done every thing requisite for your patient; in fact, you can do no more.

In concluding the subject of diseases of the heart, there may be others which I have not touched upon, but, unless my memory fails me, I have given you every thing necessary for you to know on the subject. You may have thought me tedious, from the great length at which I have entered upon them, but particularly from the stress which I have laid upon functional disorders of the organ, which, probably, you may be inclined to set but little value upon; but I would beg of you most earnestly to consider the paramount necessity which exists that you should be able to distinguish accurately between these latter and structural diseases of the same organ, clearly resembling each other as some forms of both do. Recollect the serious responsibility which attaches itself to you, to be able to distinguish

eaeh variety of the diseases of such an important organ as the heart from the others; and that the effeet of making a false diagnosis may be ruinous to your patient, and that while you are ordering a system of depletion, one of a totally different charaeter may be necessary.

In every disease it will be incumbent upon you to know what other affeetions of the same organ may resemble the one which you are about to treat, in order that your patient may not be made a victim to a elaim of pretended knowledge on your part, whieh you really do not possess.

[In our last volume, p. 35, we alluded to a paper by Dr. Christison on some forms of funetional disease of the heart to which the young adult was especially amenable. The same important subject is also touched upon by Dr. Corrigan, whose remarks will be found below. It is remarkable that neither the one nor the other once refer to what has, in our experienee, been in very many cases the cause and explanation of the symptoms, namely, unnatural excitement of the sexual organs. The assoeiation of the two eireumstanees will be found on inquiry to be much more frequent than is generally suspected. Dr. Corrigan observes:]

The affeetion is curious, and one highly deserving your greatest attention. I have been frequently consulted on account of this affeetion by young gentlemen articled to merchants and attorneys, persons who spend the greater part of every day in an offiee, busily employed in writing. I have also often found it attacking young lads from the eountry, who, being suddenly taken from school and its wild pleasures, are thrust into a Dublin warehouse, there to be taxed very often, indeed, much beyond what their strength would warrant. The time at which it generally appears is uneertain, varying between the ages of thirteen and three or four and twenty. It depends, in the examples I have cited, on the sudden change wrought in all the habits of the persons attacked by it, who, instead of running about merrily and taking all the wild exercise of sehoolboys, are cooped up for ten or twelve hours out of the twenty-four in a dark dingy office, breathing its impure atmosphere in place of the pure air which they were wont to inhale in their days of freedom from all restraint, their muscular system cramped and eontracted for want of suffieient opportunity of ample development.

In other cases, we often find it assoeiated with spinal irritation, or, to speak more properly, dependent upon it. Here it sets in with persons of either sex who have shot rapidly into great height, who, in fact, have outgrown their strength, and whose muscular system has not had suffieient time allowed it to develope itself adequately to support, with proper firmness, the extraordinary and quiek extension of the spinal column. In these cases it very often happens that the spine is never thought to have anything to do with bringing on the affeetion in question, until deformity or curvature of the spine unequivoeally presents itself. It commonly sets in with these persons at or about this period of very quiek growth, and is in general associated with other marks of debility. The patient will tell you that palpitations eome on if he run or walk at all fast, that he cannot walk

any distance without feeling a sensation of weakness across the loins extending down to the muscles of the legs, which, as in other affections of the heart, are often attacked with cramps, that he bleeds from the nose on making very trifling exertions, and that on such occasions his breathing also becomes oppressed.

In other instances it makes its appearance suddenly. The patient is attacked with night-mare, from which horrible state of feeling he awakes to find his heart affected with violent palpitations; the alarm is given; a medical man is sent for; he thinks (as the symptoms seem to him to portend) that an attack of pericarditis is about to set in, bleeds the patient, and thus makes matters worse than before. After some little time, in addition to palpitations coming on when the patient takes exercise, or is affected by mental irritation, they attack him when at perfect rest, in bed for instance, or uninfluenced by any perceptible cause. Perhaps now they are accompanied by pains, shooting in the direction of the heart, *which, on contracting, often conveys to the sufferer a feeling as if it had grasped upon something*, so strong is the force with which it occasionally acts. But, no matter what the loudness of sound, or the force of impulse of the heart may be, the pulse in these cases is always soft, weak, and perhaps more frequent than natural. It would appear as if the heart did not possess power to propel the blood into the extreme vessels with a degree of force sufficient to render the pulse full. In these cases, the irregularity of the heart's action depends upon an undue degree of nervous energy being transmitted to it, which stimulates it to frequent and violent contractions; and this irregular concentration of nervons energy upon the heart is owing to derangement of the general health, produced by the altered habits of the individual affected. In this disorder you will always find the bowels confined; and you will derive great benefit here from keeping the alimentary canal in a healthy state.

The only diseases with which it could be confounded are, hypertrophy of the heart and contraction of the auriculo-ventricular opening. From both it will be readily and at once distinguished by the absence of bruit de soufflet, which you never find in this instance, no matter how loud the sounds, or how violent the action of the heart may be. It is an affection perfectly free from danger in itself, though, as I have said before, it often is but a symptom of spinal irritation, which is completely unheeded both by patient and physician, in their concern for the more vital organ, until plainly marked signs of this spinal affection make their appearance in the shape of curvature of the spine.

In such cases, our practice must be determined by the amount of mischief present. Here our first step must be local bleeding, either by leeches or cupping, or frequently repeated blisters; these, joined to a tonic plan of treatment, comprise all the items necessary to be adopted by us. In these cases unaccompanied by spinal irritation, when business will allow of the patient's absence for some time, the unwholesome atmosphere of the town should be changed for the more invigorating air of the country. The constitution should be kept up to the highest tone possible, only falling below that which produces in-

flammatory action. A full allowance of animal food, adapted in quantity and quality to the digestive power of your patient, should be given, joined to a moderate proportion of fermented liquors. Do every thing in your power to increase the general muscular energy, and, according as this is brought about, the symptoms of irregular action of the heart will cease. Along with this you will prescribe, with very great advantage, a residence on the sea-coast, where the benefit derivable from rambling along the crags and cliffs will tend to invigorate both the corporeal and mental faculties. While speaking of the sea, I must not forget to remind you that sea-bathing is a most powerful auxiliary here to your means of cure, either in the magnificent bath which the hand of nature has fashioned from the waters of the wide Atlantic, or in the less noble, though occasionally more beneficial, substitute which the hand of art has provided for us in the cold or tepid shower-bath. Among the purely medicinal agents which we can employ in the disease, iron affords those from which most benefit is derivable. Of all its different preparations, the tartrate is that from which experience would warrant me to expect the most beneficial results. In order to effect any advantage, its use must be persevered in steadily for some months, in doses of half a scruple three times a day. This, or some other preparation of iron, should be given for the above period, in doses adequate to produce a beneficial effect; while acid. hydrocyanic. or aqua laurocerasi, may be given with advantage in controlling the distressing palpitation of the heart. But one of the most beneficial means that we can adopt for improving our patient, consists in tranquillizing the mind, and freeing it from all dread as to the ultimately favorable termination of the case. Tell him this simple fact, that the disorder, though an unpleasant, is not at all a dangerous one; and that as to its being finally removed. there does not exist room for a shadow of doubt or fear; but never lead him to imagine that the cure of it will be, by any means, a speedy one. *The contrary is the case, for, under the most favorable circumstances, a period of two or three years, and in unfavorable cases, perhaps, of ten or twelve years, may run over before the cure is obtained.* You can have no à priori conception of the good which is done by quieting the patient's mind in this disease. His mind, unusually sensitive about the result of the disease under which he labours, is, in its present unquiet state, a perpetual cause of irritation, keeping up the heart's irregular action. Remove the groundless cause of this exquisite sensitiveness touching the issue of the disorder, and the diseased actions themselves will, in every case, experience a sudden alleviation, almost magically produced. To sum up the treatment of this affection, recollect that the disorder is one of debility; the way to remove which is by keeping up the muscular energy to the highest pitch of tone, by a proper allowance of animal food, suited in quality to the digestive powers of your patient.

Your purely medicinal treatment will consist in regulating the state of the alimentary canal, and assisting to raise the system to a high degree of vigour by the administration of chalybeate tonics. Recollect that your medicinal treatment is ancillary, in a great degree, to the hygienic. Bear in mind that the disorder has been primarily in-

duced by close confinement in an unhealthy atmosphere, and by a total and sudden change in all the previous habits and amusements of your patient. Restore him to these, aid this grand corrective means by the adoption of the regimen and medical treatment above detailed, and you will in every case have the satisfaction of finding that, according as your patient's debility of constitution gives way to your remedies, the palpitation and irregular action of the heart will cease, leaving you patient in perfect possession of renovated strength and health, the greatest blessing which you could possibly confer on him.

Art. 11.—*On the Treatment of Organic Disease of the Heart.*

By S. Scott Alison, M.D.*

Dr. Alison remarks that the main indications of treatment in organic heart diseases are, "the removal or abatement of the source of increased resistance to the circulation—the prevention and restraining of dilatation—the maintenance of hypertrophy of the walls at that point suitable to the wants of the embarrassed circulation—the invigorating of an enfeebled organ, and in a few instances, the abatement of the nutrition and activity of the heart, when these are abnormally increased, without there being present an increased resistance to be overcome."

The first indication, says Dr. Alison, is one which should never be overlooked, but it is one confessedly difficult of accomplishment in many cases. "When pulmonary disease has been the source of the resistance, every circumstance should be avoided which is calculated to aggravate the disorder." Paroxysms of dyspnœa, fits of coughing, and exposure to cold, are particularly to be guarded against.

Adhesions of the pericardium, according to the author, although a frequent cause of embarrassed circulation, may, in the course of time, be elongated and even absorbed; as may likewise the lymph which is thrown out upon the valves. When this lymph is recent it is necessary, in the first place, to ascertain whether the action which gave rise to it is subdued. If such be the case, it will be sufficient to keep the patient quiet, and to allay the irritability of the heart by conium or digitalis, and to promote the secretions. If, however, any trace of inflammatory action remain, leeches, mercury, and counter-irritation, will be necessary.

The inflammatory action having been subdued, the removal of the obstructing lymph may be attempted. For this purpose the author thinks it of great importance to impart vigour to the system by the exhibition of iron. For the removal of the lymph, he prefers iodine to the mercurial preparations.

Dilatation of the heart requires an invigorating plan of treatment, consisting in wholesome food, pure air, and moderate exercise. It is in these cases that the author has found the preparations of iron of essential service.

* Observations on Organic Alterations of the Heart, &c. London, 1845.

The third great indication in the treatment of organic alteration of the heart, the maintenance of such an amount of hypertrophy as is required by the degree of obstruction to the circulation, can only be fulfilled by a plan of treatment, varied according as the hypertrophy is disposed to exceed or fall short of this point.

In the former case, the occasional application of leeches is recommended, with blisters, and the internal use of digitalis. In the latter case, when the heart appears deficient in the power necessary to meet the wants of the circulation, the treatment advised for simple dilatation will be suitable.

ART. 12.—*Treatment of Dilatation of the Heart.* By O. B. BELLINGHAM, M.D., Physician to St. Vincent's Hospital, Dublin.

(*Dublin Medical Press*, Sept. 17, 1845.)

"As a general rule, the treatment of dilatation is directly the reverse of that of hypertrophy. In the one case, we have evidence of increased nutrition of the heart; in the other, of feeble or diminished nutrition. In the one case, we find a strong heart impelling the blood with increased force through the general arterial system; in the other, we have a feeble heart, unable to propel its contents to any distance, and probably incapable of emptying its cavities.

The objects to be held in view in the treatment of dilatation are:

1st. To remove the cause which occasioned the dilatation, if that be practicable.

2dly. To tranquillize the circulation, and to relieve the heart of the blood which overloads or oppresses it.

3dly. To strengthen the parietes of the heart, by which it will be enabled to expel its contents, and the further progress of the dilatation be opposed.

4thly. To diminish or remove the congestion of the lungs, liver, &c., and the other effects of impeded circulation, without debilitating the patient.

If the dilatation be the result of valvular disease, or if it has followed adhesion of the pericardium, the effect of pericarditis, we can do little more than palliate symptoms; both these pathological conditions being irremediable. On the other hand, if the dilatation is the result of any cause which can be removed; if, for instance, it has followed prolonged muscular exertion, or violent mental emotion,—if it has succeeded to frequent attacks of bronchitis, or occurs in patients debilitated by loss of blood from any cause—if it arises in subjects weakened by previous illness, or comes on in chlorotic and anœmic individuals, much benefit may often be derived from treatment, provided the patient is young, the disease not in an advanced stage, and not complicated with attenuation or softening of the parietes of the organ.

In order to tranquillize the circulation and to relieve the heart of the blood which overloads or oppresses it, this organ must be maintained in as complete a state of repose as possible, which is to be accomplished by rest, by avoiding everything likely to excite or

agitate the mind, by regulated diet, and by obviating dyspeptic symptoms, which are very common attendants upon this condition of the heart. The food should be nourishing, and but little fluid is to be permitted; at the same time, the secretions are to be maintained in a healthy condition; by these means, the amount of blood will be diminished, while its quality will not be deteriorated. Functional derangement of the stomach is common in cases of dilatation, and nothing under such circumstances is more likely to bring on palpitation and add to the distress of the patient, than a full meal or flatulent food; hence, the food should be such as is easily digested, and should be taken in small quantity at a time; and anything which occasions distention of the stomach or flatulence should be carefully avoided. The medicines calculated to relieve the dyspeptic symptoms will vary, of course, according to circumstances; sometimes antacids, at others acids are indicated; carminatives are occasionally serviceable, and the hydrocyanic acid in minute doses is sometimes given with advantage.

In order to strengthen the parietes of the heart, and to enable it to expel its contents, tonics variously combined are indicated; by improving the general health we give tone to the heart, and thus assist in diminishing or retarding the increase of the dilatation. Everything calculated to debilitate the system is to be avoided; hence, bleeding, digitalis, and antiphlogistic measures of every description are contra-indicated as a general rule. If digitalis is a dangerous remedy in some of the diseases of the heart which we have been considering, it is still more so in dilatation when at all advanced; or if the parietes of the ventricles are attenuated. Here the palpitation is an effort of nature to assist in relieving the heart of the blood which distends its cavity; if we diminish the increased action by administering digitalis, we take away the only safeguard left; the organ can no longer accommodate itself to the amount of blood which it receives, and the death of the patient may be the result.

In order to diminish or remove congestion of the lungs, liver, &c., and the other effects of impeded circulation, the same measures are indicated as have been alluded to in treating of valvular disease; but here we must be very guarded in the use of measures likely to debilitate the patient, and we must trust rather to diuretics, diaphoretics, and expectorants, than to hydragogue cathartics, or local abstraction of blood, which prove so useful in other forms of heart disease. As the extremities are habitually cold, means should be employed to equalize the temperature, and to determine to the surface, by which congestion of internal organs will be likewise relieved.

In conclusion, it must be borne in mind, that dilatation is a chronic affection, which, in its early stage, and when moderate, produces little inconvenience, and hardly requires treatment, but which, when advanced, is little under the influence of internal remedies; any improvement, consequently, must be slow and gradual, and in many cases we can do little more than palliate symptoms; consequently, the success of our treatment will depend in a great measure upon the patient observing carefully the rules laid down for him; if he lives intemperately, or is obliged to labour for his bread, the disease will run a more rapid course. But "if (as Mr. Burns observes) the pa-

tient keeps quiet, submits to a regular, light, and digestable diet, and employs occasionally remedies to relieve the dyspeptic symptoms, it will afford him comfort to know that he may ward off the fatal issue for a considerable length of time, and may even enjoy tolerable health."

Art. 13.—*General Principles of Treatment in Aneurisms of the Aorta.*

By Norman Chevers, M.D.

(*Medical Gazette*, Aug. 29, 1845.)

The observations, of which we shall here give an abstract, form the concluding part of an excellent essay upon "general and aneurismal dilatations of the aorta," by a gentleman who is well known for the assiduity with which he has investigated the pathological anatomy of the heart and large vessels. The first part of the essay is occupied with the causes and forms of the various aneurismal dilatations to which the thoracic portion of the aorta is subject, in the course of which several opinions in general circulation are clearly shown to be erroneous, and among these, that which attributes the commencement of an aneurismal dilatation to that part of the artery in which atheromatous or more solid deposit is either most abundant and the furthest advanced. The author then considers the treatment of aneurism after the following manner:

The chief indications to be fulfilled in conducting a rational plan of medical treatment in cases of aneurisms of the aorta are:

"To encourage as much as possible the depositing of thin layers of plastic coagula within the aneurismal sacs.

"To render the circulation through the arteries, capillary system in general, and the principal venous trunks as free as possible.

"To diminish the volume of the circulating fluids in such a manner as to reduce the proportion of thin watery constituents, without diminishing the fibrin, or producing debility in the system; and lastly, to maintain the muscular powers of the heart."

In speaking of the system of Valsulva, the author is inclined to admit the justice of the principles of that system as carried out by its author. He, however, considers that in the hands of incautious practitioners it has been the cause of a great amount of evil, "becoming in their hands a system of injudicious depletion and starvation, instead of being, as it was originally designed to be, a means of tranquillizing the circulation, reducing the fluids, but at the same time of maintaining the power of the vascular organs."

The natural process by which the cure of an aneurism is effected, is, by procuring obliteration of the sac by layers of firm coagula.* In aneurisms of the extremities this alone appears to be sufficient, but in aneurisms of the aorta, a far more delicate process requires to be effected, as here the sudden formation of loose coagula will always be liable to occasion rupture of the walls of the sac. "It is necessary in aneurism of this artery," says the author, "to cause the obliteration of

* In reference to this point see Abstract, vol. I, p. 103 et seq.

the sac, by layers of coagulum firm enough to resist infiltration of blood, and which shall present internally a smooth surface over which the blood may readily glide."

Another object in the treatment much insisted upon by the author, is that of removing visceral congestions, and avoiding all unnecessary irritation and excited action in the organs, at the same time endeavouring to keep up a natural discharge of their functions. The two organs which it is especially necessary thus to attend to, are the liver and kidneys. Many cases of disease of the heart and great vessels would be readily enough kept in abeyance, were they not aggravated by consentaneous inactivity or irritation of these two great emunctories.

In aneurism, as in every other form of organic disease of the vascular centres, the prolongation of life generally, in a very great measure, depends upon the maintenance of that degree of rest which, while it prevents the capillary obstruction which is attendant upon muscular action, does not deprive the patient of the benefits of air and gentle exercise.

The reduction of the volume of the circulating fluids has always been considered a main point in the treatment of organic diseases of the heart and its appendages, but "unfortunately" observes the author, "depletion has been too often the course adopted, to effect this purpose." The desired effect, however, may be far more successfully produced by gradually diminishing the fluid ingesta, than by any system of active evacuation; and the fact, that the palpitation, lividity of the surface, &c., mainly depend upon the admission of an undue quantity of material into the blood, becomes itself a suggestive that in such cases, all unnecessary articles of diet, solid as well as fluid, should be dispensed with.

The author animadverts with severity upon the practice of exhibiting digitalis, and other medicines which have a depressing effect upon the power of the heart. The great error, he observes, is in regarding the palpitation, for which these medicines are generally given, as though it were itself the disease, and not what it really is, the sole means by which an overloaded and obstructed heart is enabled to propel its contents. The rational mode of treatment is clearly, to remove the causes of the obstruction from which the heart suffers, where these are not of a permanent nature; or if this be not possible, to diminish the load of fluid which embarrasses the heart when the palpitation being no longer requisite, will cease of itself. It is certainly unwise to administer a medicine which its advocates justly term a "direct sedative of the heart" in a class of diseases, where all the worst symptoms arise from the difficulty that organ experiences in propelling its contents.

Whenever, as frequently happens, the patient appears to be gradually sinking from the violence of the paroxysms which attend the failure of the heart's powers, restoratives, or even powerful stimulants, become necessary.

ART. 14.—*On Anæmic Murmurs.* By H. M. HUGHES, M.D. Assistant Physician to Guy's Hospital.*

In certain states of the system, or, it may be, with certain conditions of the circulating fluid, as in chlorosis, or in anæmia from hemorrhage, or from other causes, murmurs frequently arise from the passage of the blood, independently of absolute disease of the heart or great vessels. These are termed *anæmic murmurs*, or "*chlorotic bruits.*"

They are ordinarily of the softer kind, and resemble the blowing of a pair of bellows ("*bruit de soufflet*"), but they are sometimes quite harsh, and resemble the rougher morbid sounds, as that of filing or sawing, (*bruit de râpe* and *bruit de scie*").

They are very generally supposed to be confined to the aortic openings. This is certainly a mistake. They are most assuredly very frequently connected with the pulmonary artery, in which murmurs, quite independent of any disease of the vessel, or of its valves, are far from uncommon.

Murmurs often arise from some body pressing upon this vessel; as a solid mass, the result of pleurisy, of pneumonia, or of phthisis, or enlarged bronchial glands, abscesses of the anterior mediastinum, &c. &c. The murmurs frequently also coexist with chlorosis, or with other forms, or with other forms of anæmia. Are these latter murmurs, then, whether in the pulmonary artery or in any other part of the circulating system, to be distinguished with tolerable certainty from morbid sounds, the result of organic obstruction within or without the heart or large vessels?

Generally speaking, they may, I believe, be distinguished from each other; but they certainly cannot always be so; and never with absolute certainty by the mere character of the murmur alone. There are, I feel assured, some examples of these anæmic murmurs, which can be proved to be simply functional, and not to arise from organic disease of the heart or its vessels, or from pressure upon them, only by the results of treatment.

Let, then, the student be careful not to assert too confidently that a patient, on the one hand, has organic disease of the heart, or great vessels, merely because he has a harsh murmur over the aorta, an occasionally irregular rhythm, and a vibrating pulse, which usually coexist with an anæmic condition of the body, or he may cause unnecessary alarm and anxiety; nor let him, upon the other hand, too hastily determine, that, because a murmur is soft, and his patient is an hysterical girl, with a pale face, and is subject to leucorrhœa and to amenorrhœa, that she has no organic disease; or some day, to his great surprise, grief, and mortification, and possibly also to his disgrace, he may find she has died suddenly with diseased heart.

Anæmic murmurs, however, it may be stated, are very local, and are generally pretty much confined to the situation of the sigmoid valves, either aortic or pulmonary, or both; they do not follow the course of the large vessels so fully, or so frequently, as do the mur-

* Clinical Introduction to the Practice of Auscultation. &c. p. 221.

murs arising from disease of the valves, or of the arteries: they occur only during the systole of the ventricles; and as they cannot arise from regurgitation through the mitral valve, they are not heard very distinctly below the left nipple; they are always, so far as I know, accompanied with a smart smacking impulse; they generally disappear for a time while the individual is quiet, mentally as well as bodily, if by that quiet the heart assume a natural impulse; and they are always diminished, and generally disappear entirely, under suitable treatment.

The origin of the anæmic murmurs has latterly been very generally attributed to a watery condition, or a diminution of ordinary viscidity, of the blood; in consequence of which it is believed that the particles of the fluid move more easily over each other, are therefore more freely agitated, and thus give rise to the vibrations which produce the murmur. This may have some, and perhaps an important, influence in producing them.

But there are other circumstances which also appear to play an important part in their causation. The principal of these is the remarkably quick and sudden contraction of the ventricles; in consequence of which the fluid contents of the cavities are propelled through the comparatively small area of the mouths of the large arteries in a shorter time than during the leisurely contractions of health, or the frequent, but not sudden, contractions existing in some other forms of disease. Though, therefore, no actual contraction exists, an obstruction is practically produced by the increased velocity with which the blood is propelled through the aortic and pulmonary openings. The increased agitation in the fluid thence arising, it is at least probable, has a principal part in the production of anæmic murmurs.

If the heart beat quietly, and the impulse be natural, however decided the pallor of the face, and whatever the watery condition of the blood, no murmur, I believe, exists, when no mechanical obstruction is present.

It is also possible that the *quantity* of the circulating fluid is decreased in such cases, in addition to its *quality* being altered, and that while, by the elasticity of their coats, the arteries are capable of accommodating themselves to the diminished quantity of the fluid, the cavities of the ventricles retain their normal capacity, and that on this account an absolute, as well as a comparative obstruction, may exist to the transit of the blood.

Concurrently with these anæmic murmurs at the origin of the large arteries, there is often heard, upon the application of the stethoscope to the side of the neck, a curious sort of humming noise, which ceases when firm pressure is exerted upon the jugular vein at a point above that on which the end of the stethoscope is placed. It is continuous, not intermittent like the arterial murmur, and is, therefore, sometimes called the "continuous humming." as well as the "venous murmur."—"*bruit de diable*," &c.

It most probably depends upon partial obstruction to the quickened flow of blood through the veins. Strong pressure causes it to cease; but without pressure, *directly or indirectly applied*, it is, I believe, never heard. Like the anæmic murmur of the arteries, it is supposed to be associated with a watery condition of the blood, and it is, we

are told, a frequent, if not a constant, attendant upon that state of the system with which such a watery condition of the blood is a concomitant.

This statement is not made from my own observation, but if true, the venous hum may perhaps be considered a useful assistant indication of the anæmic state.

But great obstruction to the blood may, as has been previously hinted, exist; extensive disease may be present in the valves of the heart, or in the large arteries, and yet no murmur may be heard. This arises from circumstances which may be, as they have already been partially, illustrated by the stream, in wich a certain rapidity of the current is necessary to produce such an agitation of the water as will give rise to sound. Though the bottom of a rivulet be very uneven, and it banks exceedingly irregular, yet if the current be not tolerably strong, little or no ripple will be produced, and no sound will be generated. It is just so with the blood, rapidity of the current of the blood, as well as obstruction thereto, is necessary to produce such an agitation among the particles of the fluid as will give rise to sound.

Hence it often happens that a heart with extensive disease of the valves may be without murmur while the patient is quiet, and the circulation is slow; though immediately the circulation is accelerated, either by physical exertion or by mental emotion, a murmur becomes distinct. Hence, also, it happens, that when the cavities of the heart become greatly distended, in consequence either of the magnitude of the obstruction, or of defective nervous power, the ventricles are frequently incapable of acting upon and propelling their contents with sufficient force to produce a murmur. The channel is irregular enough, but the rapidity of the current, and of the resulting vibrations, are not equal to the generation of sound. Hence, likewise, it arises, that when fluid is present to a large amount in the pericardium, the heart may be so oppressed with the accumulation upon its exterior, that, though great obstruction exist within, no murmur is produced. Thus it will be often observed that when the obstruction is greatest, the murmur, if even it be heard at all, is very feeble; and that when the obstruction is small, the murmur is very loud; thus also, in persons who, for weeks and months, and even years, have presented notably morbid cardiac sounds, these sounds, if the individuals are not carried off suddenly, very frequently, or perhaps even generally, cease altogether some days before death.

The cause of this, as before stated, is either that the heart does not contract with sufficient power, or if it act forcibly, that it cannot act upon, and propel through the contracted orifices, the large quantity of blood which distends its cavities with a rapidity sufficient to give rise to sound.

Let, then, the student ever bear in mind the truth, that mere obstruction is not in itself sufficient, but that a certain force or rapidity of the circulation must be necessarily combined with that obstruction, to give rise to morbid endocardial sounds. Murmurs may exist without any obstruction of an organic kind; but without a certain degree of force in the circulating current they cannot exist.

ART. 15.—*Statistics of the frequency of Cardiac and Pulmonary Complication in Acute Rheumatism.* By P. N. LATHAM,* M.D., Fellow of the Royal College of Physicians, &c.

[The following remarks embody the experience of Dr. Latham, as related by him in the recently published and most valuable work, before alluded to. He observes that between the years 1836 and 1840, both inclusive, he met with 136 cases of acute rheumatism, of which 75 were males, and 61 were females.

Of the 75 males, the heart was affected in 47, unaffected in 28. Of the 47 cases, the disease was confined to the endocardium in 30, to the pericardium in 3, and affected both simultaneously in 7. In 7 others, although the heart was undoubtedly affected, the exact seat of the disease was uncertain.

Of the whole number of males in whom the heart was thus affected, 3 died, and in these 3 both pericardium and endocardium were inflamed.

Of the 61 females, the heart was affected in 43, and not so in 18. Of the 43 cases, the seat of the disease was the endocardium alone in 33; the pericardium alone in 4; and both membranes in 4; the exact seat of the disease was doubtful in 2. None of these females died.

The account therefore of both males and females will stand thus:

No. of Cases	136
Heart exempt	46
Heart affected	90
Seat of the disease in the heart:	
Endocardium alone in	63
Pericardium alone in	7
Endocardium and pericardium in	11
Doubtful in	9
Deaths	3

Of the 63 patients who suffered from endocarditis, and who became convalescent, auscultation still revealed the fact, that after the inflammation had ceased, the membrane recovered complete integrity only in 17, and that it remained permanently uncured in 46. Of the 30 males, the endocardial murmur ceased entirely only in 8, while it remained as long as they continued under observation in 22. Of the 36 females, it ceased entirely only in 9; and remained in 24.

In the 136 cases which form the basis of this inquiry, the heart was inflamed in 2-3ds of the whole; the lungs only in about 1 in 5. In these cases 24 in number, the pulmonary affection was severe; they consisted of bronchitis 8 cases; of pneumonia 18; of both combined 9 cases; of pleurisy 2. Of these 24 cases, 2 proved fatal.

Of the 46 cases of acute rheumatism in which there was no heart complication, the lungs were likewise free in 6, or in 1 in 9 cases. On the other hand, in the 90 cases in which the heart was affected, pulmonary disease also occurred in 1 in 5.

* Lectures on Subjects connected with Clinical Medicine, vol. i, p. 144.

SECT. IV.—DISEASES OF THE CHYLOPOIETIC SYSTEM.

ART. 16.—*On Perforating Ulcer of the Stomach.* By JONATHAN OSBORNE, M.D., Queen's Professor of Materia Medica, &c.

(*Dublin Journal of Medical Science*, July 1845.)

This is a form of disease, observes Dr. Osborne, which is peculiarly insidious, and which from the slightness of its symptoms, is, as a point of pathology, involved in considerable obscurity. The form of the ulcer is unlike any other, being as it were punched out in a circular form, with a smooth and perpendicular edge. The most usual situation of the ulcer is always at or near the lesser curvature; and its existence is often not suspected, until the rupture of the peritoneal coat, and the escape of the contents of the stomach, give rise to fatal symptoms. Dr. Osborne appears to hesitate whether he should consider the disease as idiopathic, and distinct from all others, or whether it should be placed among the affections of the gastric glands, or of the mucous membrane. The earlier symptoms are not often noticed, but from the few cases in which his attention has been directed to them, the author thinks that they are indicative only of acidity of the stomach.

The statistics of the disease, as stated by Rokitansky, are as follows: Of 79 cases, the ulcer was situated on the posterior wall in 20; on the small curvature in 15; on the anterior wall in 5; a short distance from the pylorus in 16; in the duodenum in 6; in different parts of the stomach at the same time in 16. Their size varied from that of a sous to that of a five franc-piece. In 12 cases there were two; in 4 there were three; and in 1 there were five ulcers existing at the same time.

The production of these ulcers is involved in obscurity; but according to the views of the author, they depend in the first instance upon the irritation of a group of the glands which secrete the gastric juice.

The disease is distinguished from the less formidable affections of the stomach, by the insignificance of the symptoms of acidity and pain, compared with the dreadful process of ulceration, which is gradually going on. In none of the cases which fell under the author's observation, was there vomiting either of blood or sanious matter, such as is usual in other forms of gastric ulceration. The main symptoms appear to be slight acidity of the stomach, a soreness felt in one spot in the epigastric region, and finally the fatal rupture and effusion of the contents of the stomach which usually terminates life in about twelve hours.

The disease is frequently to be traced to grief or anxiety. Professor Rokitanski states that out of 79 cases, 46 occurred in females. The same preponderance has occurred in the author's experience. Hence it would appear that there is some peculiarity connected with the sex, which renders them liable to the disease.

The author here introduces his notions respecting the mode of ascertaining not only the existence of these and other ulcers of the stomach, but also of the part of the viscus in which they are situated.

This, he remarks, depends upon the complete insensibility of the stomach to the sense of touch, which causes it not only when healthy, but even when irritated or inflamed, to make those states known by the symptoms produced in remote parts, rather than by pain in the organ itself. When, however, ulceration takes place, a new surface is formed, possessing the same sensibility to touch as other ulcers, and susceptible of a feeling of smarting or burning whenever it is immersed in the acid fluids of the stomach. The diagnosis of the situation of the ulcer then depends upon the effect which the position of the patient has either in producing or alleviating the pain. When he lies so as to bring the fluids of the stomach in contact with the ulcer, the pain is perceived, but when he lies so as to keep the denuded part above the level of the gastric fluid, he enjoys comparative ease; and in general there is a considerable remission of pain as long as the patient remains in the erect posture, arising from the fact that in the majority of cases, the ulcer is seated upon the lesser curvature. [Four cases are here appended, which appear to justify the conclusion of the author, in respect to this mode of forming a diagnosis.]

Professor Rokitansky states that there is evidence of the occasional cure of these ulcerations, in the fact that circular cicatrices are frequently seen on the internal surface of the stomach, in persons who have been known to suffer from the foregoing symptoms. The treatment recommended by the author, consists in the cautious use of metallic astringents, and in small doses of opium, which he prefers to any other form of narcotic. The lime moxa is also highly praised by him.

The occurrence of perforation is thus described. "When this dreadful event has taken place, it is known by the following symptoms: a sudden attack of violent pain, shooting through the epigastrium and abdomen; the efforts of vomiting are unaccompanied by the rejection of the contents of the stomach by the mouth; rapidity of the pulse, soon passing into extreme weakness and irregularity; tympanitic distention and hardness of the abdomen; and a constant desire to pass urine, continuing although the bladder has been repeatedly emptied. The average duration of life under these circumstances is about twelve hours; but the cold perspiration and collapse of the features announcing the approach of death, generally commence about the eighth hour."

"In some instances life is protracted, and the symptoms may be even mitigated, when the contents of the stomach happen to be small in quantity; or when, in consequence of adhesions previously formed in the parts in the vicinity of the stomach, the effusion has been prevented from extending through any extent of the peritoneal cavity. The constant and urgent desire to evacuate the bladder, is, according to my observations, a symptom always present, except under the circumstances just mentioned, and from its absence in these cases it would appear to be caused by the sudden presence of the effused fluids of the stomach around the bladder, communicating to that organ the peculiar sensation belonging to the presence of fluid within its cavity.

When the effusion has taken place, all hope of recovery by the aid of medicine is precluded. We must in particular avoid exhibiting stimulating medicines by the mouth, as they, by passing through the aperture in the stomach, produce a dreadful increase of torment. At this crisis, little remains for us to do, but to administer opiates, to

apply fomentations, and when the heart's action begins to fail, to endeavour to move its energies, by wine and other cordials, administered in the form of enema."

[The following statistical account of 51 cases of perforation of the stomach are furnished by Mr. Crisp. This gentleman considers uterine derangement to be the main predisposing cause of the disease:]

Cases 51 . . . Females 39. Males 12.

The ages of the females were as follows:

Between 15 and 20	21
„ 20 „ 25	10
„ 25 „ 30	5
„ 30 „ 40	1
„ 40 „ 50	1
„ 50 „ 60	1

Previous state of health.—The greater number suffered from dyspeptic symptoms prior to the attack; the most frequent of which were occasional pain in the region of the stomach and left side, pyrosis, and flatulence. Vomiting was not a constant symptom, although it occurred in many instances. The menses were irregular in thirteen; in twenty-five this function is not mentioned; in one only the patient menstruated a month before the attack.

Most, (if not all,) of the females, *were unmarried.*

Duration of the attack from twelve to thirty hours. In one instance, (Dr. Elliotson's patient,) life was prolonged for seventy hours.

Morbid appearances.—The apertures in the majority of the cases were situated in the smaller curvature, more frequently midway between the pylorie and cardiae openings, but in many instances near the cardia. In one case only, was the perforation close to the pylorus, and in this instance it will be seen that a fibrous tubercular excrescence existed externally. In *nine examples,* as in Mr. Cox's case, *two ulcers were present, opposite to each other,* so that when *the stomach was in a state of collapse,* the diseased parts *were in contact.*

Males.—Of these only one was under twenty years of age. The aperture in nine was close to the pylorus; in three midway between the openings. Five of the examples were of a doubtful character, the parts around the opening being hard and callous.

Prov. Med. and Surg. Journ., Sept 17, 1845.

ART. 17.—*On Hydatid Tumours of the Liver.* By GEORGE BUDD, M.D. F.R.S., Professor of Medicine in King's College, London.

[The observations which we shall present to our readers in a slightly abridged form, constitute a portion of the fourth chapter of Dr. Budd's recent admirable work on "The Diseases of the Liver." The commencement of the section which offers a most complete description of the natural history, development, and final changes which take place in the hepatic acephalocyst, we shall pass over, and proceed to analyse those of the author's remarks which more directly bear upon practice. The causes of hydatid formations are thus stated:]

"From the cases which have been placed upon record, hydatid tumours appear to be of nearly equal frequency in the two sexes. They

are most common from the age of 20 to that of 40, but may occur at any age from 6 to 50 years. I have found no instance in which such a tumour occurred under the age of 5 or 6, or above that of 52. Cruvelhier has related the case of a man who died at the age of 77, with an hydatid tumour of the liver, which appeared fifteen years before, that is when he was 52. In all other cases which he collected, twenty in number, the tumour seems to have been formed under the age of 40.

Of the published cases of hydatids of the liver, there is a considerable portion in which the tumour seems to have formed soon after a blow on the side, and as was supposed, in consequence of it. Among the cases collected by Cruvelhier, there are four in which the tumour was supposed to originate in this way; and in the paper by Mr. Cæsar Hawkins is the eighteenth volume of the Medico-Chirurgical Transactions, there are several others in which the tumour seemed to be the effect of some injury to the side.

In some instances in which the disease was ascribed to a blow, the tumour contained a solitary acephalocyst; in others, many. In some there was only a single tumour, in others more than one tumour in the liver, or a tumour in the spleen as well. This circumstance throws discredit on the imputed cause, or is an additional argument in favour of the doctrine, that where there are many hydatid tumours in the same person, one of those tumours is the parent of the rest."

[Dr. Budd thinks that additional causes may be found in certain endemic influences, since in sheep, a class of animals very subject to the disease, a particular pasture will always give rise to them. He has observed that they are rare in India, and in sailors. He alludes also to the experiments of Klencke, mentioned in our Report on General Pathology, which seem to establish the fact of their inoculability. The symptoms of hydatids of the liver are thus described:]

"When the tumour grows rapidly, or from any cause inflammation is set up within it, the patient has severe pain in the side, and some degree of fever. Under other circumstances, that is when the tumour grows slowly, and is not the seat of inflammation, it is unattended by pain, or gives rise to a sensation of weight rather than of pain; and before it has attained such a size as to interfere mechanically with the functions of the liver, it excites no constitutional disturbance, and is not incompatible with a good state of general health. Not unfrequently indeed, the presence of a tumour of this kind is not suspected during life.

"As the tumour grows it pushes up the walls of the belly, and can in most cases be readily seen and felt. Even then if no inflammation be set up within or around it, the tumour is not painful or tender, and causes little other disturbance than that which results from its bulk. It may continue for a great number of years, indeed for the allotted term of human life, without causing other mischief, but the person is in constant risk of new sufferings, from the natural tendency of the tumour to discharge its contents by rupture. The tumour may ulcerate through the walls of the belly, and its contents be discharged outwardly, or it may open into some part of the intestinal canal. In either case the sac may close up, and the patient recover." This termination is the more to be expected in proportion to the recency of

the formation, an old tumour being liable to suppurative inflammation. In certain cases it may burst into the cavity of the peritoneum and destroy life in a few hours. There is also the risk of the formation of secondary hydatids in the lungs or other organs.

"The diagnosis of an hydatid tumour when it has attained such a size as to be readily seen and felt, seldom presents much difficulty. The presence of a large globular tumour connected with the liver, which has grown slowly, without pain, jaundice or ascites, and without fever or general disturbance, is almost evidence enough that the tumour is hydatid. It can hardly be mistaken for an abscess, which never forms and attains a large size without a high degree of fever, or for malignant disease of the liver, which gives rise not to a large globular, indolent tumour, but to an unevenness on the surface of the liver from numerous small tumours projecting above it, and which is associated with general tokens of the cancerous cachexy.

"We are much more likely to take a distended gall-bladder, which is likewise smooth and globular, and is not tender, for an hydatid tumour,—but great distension of the gall bladder almost always results from some mechanical impediment to the flow of bile along the common duct, and is attended with deep jaundice.

"But the disease most difficult to distinguish from an hydatid tumour of the liver, is an aneurism of the abdominal aorta forming a tumour behind the liver. This like an hydatid tumour may be globular, and may exist without much tenderness, without jaundice or ascites, without much disturbance of digestion, and without much difficulty of breathing. The circumstances which seem to mark the tumour as aneurismal, are, the sudden occurrence of the first symptoms of the malady, with a feeling as if cramp across the epigastrium, not attended by vomiting and purging, and not followed by jaundice; the existence of distinct pulsation in the tumour, and a bellows-sound heard over the last dorsal or upper lumbar vertebræ; but more than all, a great pain which the patient suffers in the situation of the tumour, and in various other parts of the body, especially the shoulders and legs. These symptoms are absent in cases where an hydatid sac forms a similar tumour, so that by attention, the two diseases may generally be distinguished. Cases are, however, now and then met with in which, from some unusual circumstances, it may be difficult or even impossible to pronounce that the tumour is hydatid. . . . . If an hydatid tumour of the liver which has been long indolent, should become painful and tender, and the patient should have shivering, with fever and constitutional disturbance, it may be inferred that suppuration is set up within the sac."

[The cure of hydatid tumour of the liver may, according to Dr. Budd, take place in one of two ways, either by the secretion within the sac of a matter resembling putty, or by the discharge of the tumour through the abdominal parietes, the lungs, or the intestinal canal. Both of these modes of termination are followed by obliteration of the sacs in most instances, but in the latter cases, the admission of air occasionally gives rise to suppuration of the sac. The great danger in all cases of hydatid tumour, is the risk of their bursting into the peritoneum, the result of distension from increase in the

quantity of the contents of the sac. Upon the possibility of avoiding this catastrophe, the author observes :]

"This danger would be obviated, if by any means we could so modify the fluid secreted by the inner surface of the sac as to destroy the acephalocysts without causing suppuration. It is not difficult to conceive that there may be medicines which have the power to effect this. . . . . There are two medicines, iodide of potassium and common salt, that have been supposed to have the power of arresting the growth of hydatid tumours. Iodide of potassium is much confided in by many physicians in this country, and has been for some years very generally prescribed in this disease, but I have not been able to find any decisive evidence in its favour. Mr. Hawkins states that a case occurred in St. George's Hospital, in which the tumour was much lessened, and ascites and other symptoms were got rid of for a time, by the use of iodine, but the disease was ultimately fatal. I quite think, however, that our experience of this medicine encourages a further trial of it in these cases.

"The virtues of common salt in the treatment of hydatid tumours in the liver are much relied on by some continental physicians, who recommend a strong solution of it to be applied as a poultice or lotion over the tumour."

[As medicinal means frequently fail in the treatment of these cases, the author next considers the propriety of opening them. Two cases are given in which puncture was successfully performed by Dr. B. Brodie, but these are considered as too much above the average in success to warrant the recommending of the operation as a general proceeding.

M. Recamier prefers caustic to the knife, as by the preliminary inflammation excited by the former, the peritoneum in front of the tumour is united with it by inflammation, and thus the risk of communication with the general cavity of the abdomen is diminished. Mr. Cæsar Hawkins advises the opening of the tumour only when it is large and causes great irritation, and recommends the trochar and canula. He thinks the fear of extravasation into the peritoneum much exaggerated. The author is inclined to give the preference to the grooved needle, as recommended by Dr. Prichard of Bristol.]

ART. 18.—*Case of Ileus; Portion of Intestine expelled by Stool. Recovery.* By Dr. NAGEL, of Lemberg.

K. J., a servant, had always enjoyed good health till within the last few years, when he became subject to frequent attacks of colic. On the evening of the 12th of Feb. 1843, he was seized with violent pain at the lower part of the abdomen, accompanied with shivering, and frequent vomiting and purging. On admission into the hospital, on the morning of the 13th, he was in the following state: head hot and painful; tongue foul; thirst; abdomen swollen, and tender to the touch; skin dry; pulse full, hard and frequent; vomiting, with watery stools, tinged with blood. (Antiphlogistic treatment.)

The symptoms continued much the same till the 16th, when they

diminished in intensity, and the stools were no longer tinged with blood. On the 19th, there was violent tenesmus, accompanied on the 23d with prolapsus of a portion of intestine, which, however, was reduced without causing pain.

On the 26th, the patient free from fever, and altogether in a satisfactory state; passed by stool a portion of intestine, 20 inches long, and at some points 2 inches broad; it consisted of a portion of the ileum, the cœcum, appendix vermiformis, the whole of the ascending arc and a portion of the transverse colon. The mucous membrane was everted, of a brownish colour, striated with black, especially at the cœcum; it was soft and easily removed; the peritoneal coat was likewise of a brown colour, and corroded, leaving bare the muscular coat, which was also destroyed at some points; for some days after, there was slight pain at the lower part of the abdomen; but on the 23d of March, the patient left the hospital perfectly cured.

Gazette Medicale, and Edin. Monthly Journal, Aug. 1845.

Art. 19.—*On the Acetate of Lead in Alvine Discharges.* Dr. Corrigan thus expresses himself in reference to the powers of the medicine in diarrhœas occurring towards the close of fever:

"Since I received a communication from Dr. Bardsley, recommending the trial of acetate of lead in that form of diarrhœa which comes on towards the termination of fever, and generally ends in ulceration of the Peyerian glands, I have made several clinical experiments with the view of ascertaining the powers of this remedy. I have found it exceedingly useful in controlling superabundant secretion in numerous instances. I have experienced the best effects from its employment, not only in the diarrhœa which accompanies ulceration of the mucous glands, but also in that species of diarrhœa which occurs at an earlier period of fever, and by means of which nature attempts the relief of intestinal congestion. Of its great value in the treatment of cholera I have already spoken; indeed, I do not know of any remedy by which inordinate fluxes from the bowels, whatever may be their nature, are so efficiently treated. The same remarks will apply to super-secretion from the lungs. In cases of phthisis attended with such copious secretion as to threaten suffocation, it is very beneficial: its effects are equally remarkable in chronic bronchitis with copious expectoration, and you are all aware of the great efficacy it possesses in checking hæmoptysis. I have been in the habit of prescribing it in combination with laudanum and wine vinegar; the latter I have added on the recommendation of Dr. Thomson, of London."

Medical Times, June 14, 1845.

[Canstatt relies greatly upon the nitrate of silver in obstinate forms of diarrhœa; having succeeded with it in several cases after the failure of other remedies. He prefers the subjoined formulary:

R. Argent. nitr. chrystall. gr. ¼ ad ½, solve in aquæ distill. ℥ij; adde gum. mimos. ℈ij, sacchari albi ʒij. Misce. *Dose:* A teaspoonful or two every second hour.]

Die Specielle Pathologie, &c. in Dublin Journal, Nov. 1845.

ART. 20.—*Treatment of excessive Tympanitic Distension.*—The accumulation of gas within the bowels has occasionally been known to be so great as to lead to laceration: the remedy which Schönlein has found to be most effectual for the relief of this symptom, is a clyster of cold water; the cold contracts the bowels, and diminishes the expansion of the gas, while the water at the same time absorbs a portion of it. This injection may be frequently repeated.

Review of Schöenlein's Lectures, Medico-Chirurgical Review, Oct. 1845.

ART. 21.—*Treatment of Asiatic Cholera.* Dr. M'Gregor, in the *Quarterly Medical and Surgical Journal for the North-western Provinces,* speaks highly of croton oil in this fatal disease, assuring us that it has seldom failed in curing the disease, when given sufficiently early, and combined with opium. He says, "if no blood can be obtained, I give the following draught immediately:

℞ Ol. Crotonis . . . . gts. v.
Tinct. Hyoscyami . . . 3j.
Opii . . . . . grs. v. M. ft. haust.

If the spasms remain, and free vomiting does not succeed, the following pills are administered until it arises, when the skin becomes warm, and other symptoms improve:

℞ Opii . . . . . grs. iij.
Ol. Crotonis . . . gtts. v. M. ft. pil.

Nine grains of opium and fifteen drops of oil in repeated doses, will produce these effects, but in one case Dr. M'Gregor gave eighteen grains of opium and twenty-seven drops of oil before the disease yielded. To prevent a relapse, he recommends quinine.

[Dr. Jephson, who writes in the same journal, treats cholera differently; he tells us, that after trying without benefit, stimulants, calomel, opium, &c. "he determined to pursue the same treatment as is usually followed in ague," being convinced that the two diseases were strictly analogous in their symptoms and origin. Acting upon this impression, he exhibited emetics and neutral salts, "modified and combined with opium and stimulants in some of the stages." His usual formula was a mixture consisting of an ounce of Epsom salts, two grains of tartar emetic, and eight ounces of water; the dose one ounce every half hour. After the third or fourth dose, the vomiting and purging often ceased. Dr. Anderson relates two cases in which decided benefit was obtained from the use of saline enemata.]

Med. and Chir. Review, Oct. 1845.

ART. 22.—*On the Nature of the Green Evacuations of Children.* By GOLDING BIRD, A.M. M.D., Fell. of the Royal Coll. of Physicians, &c.

(*Medical Gazette,* Sept. 7, 1845.)

[The green evacuations of children, like many other subjects of common occurrence, have attracted but little attention, further than being considered as an evidence of the irritant effects of mercury upon the liver and alimentary canal when that medicine has been ex-

hibited. The profession has been satisfied in respect of their nature, to look upon them as bilious, without possessing data derived from chemical analysis upon which such an opinion could be founded. Dr. Bird has, however, recently established it as a fact that this explanation is erroneous, as he has failed to detect more than the ordinary quantity of bile in very marked specimens of the "spinach" coloured stools. He is, as will be seen, disposed to regard the colour as depending upon the presence of modified blood. He has recently examined a specimen sent to him by Dr. Forbes, with the following results :]

"It was passed by a hydrocephalic infant whilst under the influence of mercury, and presented the following characters. It was a dirty-green turbid fluid, which, by repose in a glass vessel, separated into three very distinct portions—1. A supernatant fluid, of oil-like consistence, presenting a brilliant emerald-green colour. 2. A dense stratum of mucus, coagulated albumen, and epithelial debris, mixed with red particles of blood. 3. A deposit, occupying the lower part of the vessel, of large crystals of triple phosphate of magnesia and ammonia, in fine prisms of an apple-green colour.

"The supernatant emerald-green fluid was decanted for examination.

"A. It was faintly alkaline, possessed a broth-like colour, and a density of 10·20.

"B. The addition of a few drops of nitric acid did not alter the colour, even after ebullition. A larger quantity of the acid being added whilst the mixture was boiling, converted the emerald-green colour into a pinkish yellow; the green colour was not restored by the subsequent addition of an alkali.

"C. Acetic acid scarcely affected the green fluid, producing no apparent coagulation of mucus.

"D. A solution of acetate of lead threw down a copious grayish-green tenacious precipitate, leaving the supernatant fluid colourless.

"E. Bichloride of mercury produced a light-green precipitate, leaving the supernatant fluid pale, but not decolouring it.

"*Analysis.*

"1. One thousand grains of the green fluid left, by careful evaporation, a deep olive-green highly deliquescent extract, weighing one hundred grains.

"2. This extract (1) being immersed in alcohol of 0.837, formed a mass like bird-lime, which could not be mixed with the spirit. Even after long boiling it appeared hardly to diminish in bulk. The clear tincture being decanted, left, however, an extract weighing thirty grains. This residue possessed the yellowish-green colour of faded leaves, an odour of fresh broth, and a sweet subastringent taste, with a very slight admixture of bitterness.

"3. The alcoholic extract being carefully incinerated, left 5·5 grains of ashes, consisting chiefly of chloride of sodium mixed with mere traces of tribasic phosphate of soda ($3\ Na\ O, P_2\ O_5$). It was alkaline, but did not effervesce with acids.

"4. The portion left undissolved by boiling alcohol yielded to water thirteen grains of nearly tasteless matter, which, by incineration, left a powerful alkaline ash, weighing 1·75 grains, not effervescing with acids, and consisting nearly exclusively of alkaline tribasic phosphate of soda.

"5. The residue, insoluble both in water and alcohol, weighed 57· grains, and consisted almost entirely of coagulated albumen, dry mucus, and modified blood. It left by incineration one grain only of ashes, consisting almost wholly of brick-red sesquioxide of iron.

"The following is a view of the results of the examination:

Alcoholic extract	Organic	24·50
	Inorganic	5·50
Aqueous extract	Organic	11·25
	Inorganic	1·75
Insoluble matter	Organic	56·00
	Inorganic	1·00
Water and volatile matter		900.
		1000

"Regarding the chemical constitution of the organic portion of the alcoholic and aqueous extracts, the former consisted chiefly of fatty matter, cholesterine, and a green substance, probably identical with the so-called *biliverdin*, with mere traces of bile, barely sufficient to communicate a bitter taste to the extract, and in too small a quantity to leave any carbonate of soda in the residue of incineration. The aqueous extract consisted chiefly of ptyalin, and the extractive matters comprehended under the general term of "extrait de viande," by Berzelius. The composition of the fluid part of the green evacuation may therefore be thus expressed:

Biliverdin, alcoholic extractive, fat, cholesterine, with traces of bile	24·5
Ptyalin, aqueous extractive coloured by biliverdin	11·25
Mucus, coagulated albumen, and hæmatosine	56.0
Chloride of sodium, with traces of tribasic phosphate of soda	5·5
Tribasic phosphate of soda	1·75
Sesquioxide of iron	1·0
Water	900
	1000

"That bile may, and often must, be present in large quantity in the fæcal dejections in disease, is certain; but that it is necessarily present in the green evacuations so common in early infancy, and under the influence of mercury, may be questioned. In Simon's analysis of a green calomel stool, a large quantity of bile was found; but in the specimen examined by myself but mere traces were detected. If any quantity of this secretion really existed, the alcoholic extract must have tasted bitter, and the ash must have contained an alkaline carbonate, as from the sparing solubility of phosphate of soda (H O, 2 Na O, P_2 O) in alcohol, there could not have been sufficient of this salt present to unite with the soda of the bile to form during ignition the alkaline phosphate (3 Na O, P_2 O_5).

"I have assumed that the green colour of the matter examined was owing to *biliverdin,* a conventional term for a substance very imperfectly understood, and very likely applied to substances essentially distinct in their nature. Berzelius has compared biliverdin to the chlorophylle, or green colouring matter of leaves, although this must be regarded as partaking rather of a wax-like nature than as a mere coloured extractive. It must, however, be borne in mind, that green colouring matter may be possibly generated in the animal economy from the action of certain matters on the hæmatosine or colouring matter of blood. Thus, it is well known that when blood is exposed to the influence of sulphuretted hydrogen gas, it acquires a deep olive-green colour when viewed by reflected, and a dingy red, by transmitted light—phenomena identical with those presented by the colouring matter of bile. Attention has been drawn to this remarkable fact by Professor Leopold Gmelin. It is now ten years ago since a series of researches on the action of oxidating agents upon blood were published by Dr. Brett and myself. In that paper we described two products of the action of nitric acid upon clots of blood,—an olive-green sweetish astringent substance, and an intensely bitter yellow one; we applied the conventional term of chloro-hæmatin to the former, and xantho-hæmatin to the latter.

"Since, then, the colouring matter of blood is fully capable of being converted into green pigments under the influence of different agents, it must, I think, be admitted, that we are not to assume the green colour of an animal excretion as of necessity depending upon the presence of an excess of bile. And when chemical analysis fails to indicate the presence of any quantity of this secretion in a bright green evacuation, it is but legitimate to seek for some other cause of this tint. The proportions of the so-called biliverdin very closely approach to those of the xantho-hæmatin before alluded to, and I confess that I am induced to regard the green colour of the emerald and "chopped-spinach" stools of children, as depending upon the presence of modified blood, rather than on an excess of bile.

"Believing that the green stools alluded to are but a form of melæna, I have often closely questioned the nurses of children voiding them, regarding the appearance of the evacuations before and after the development of the green colour, and have almost constantly been told that streaks, or even clots of blood, had been observed.

"I regard, then, the presence of green stools as indicative, not of a copious secretion of bile, but of a congested state of the portal system, in which blood is exuded very slowly, and in small quantities, so as to allow of the colour being affected by the gases and secretions present in the intestines; a state of things capable of readily ending in melæna, in which the effusion of blood is so copious and sudden as not to give time for the occurrence of the changes alluded to.

"There is, moreover, a peculiarity in the green dejections of children and others whose portal circulation is congested, which, so far as I know, is quite distinct from any property presented by mere bile under similar circumstances; I allude to the effect of exposure to the oxygenating influence of the air upon them. When first voided, the "chopped-spinach" stools are, in the majority of cases, of a bright

orange colour, and they assume their characteristic grass-green hue only after exposure to air. The time required for this change varies remarkably. I have seen an orange-coloured stool become green in a few minutes; and in the same patient, only a day or two afterwards, many hours may have been required to effect the same change."

SECT. V.—DISEASES OF THE GENITO-URINARY SYSTEM.

Art. 23.—*On the Pathology and Treatment of Albuminuria.*

By G. O. Rees, M.D. F.R.S. F.G.S. Assistant Physician to Guy's Hospital.

"When albuminuria sets in, it is often to be traced to exposure to cold, or a damp and cold atmosphere, under circumstances of depression and fatigue; sometimes, also, to intemperance, and more especially to the use of ardent spirits. The type this disease may assume, as regards the acute and chronic forms, would appear to depend on the age, constitution, and habits of life of the patient. Thus in some we find such exposure followed by immediate and violent reaction, indicated by a hot skin and dry tongue, with a hard pulse, pain in the head, and severe thirst, while pain in the loins, and sometimes, but not always, ischuria, point to the kidney as the seat of the mischief. The urine is high coloured, loaded with albumen, and occasionally tinged with blood. The stomach is irritable, and vomiting not unfrequently occurs, while partial œdema of the face, or complete anasarca, are the most common concomitants. There is great liability to complication with serous inflammation in this form of the disease; and it is thus, in fatal cases, that life is most frequently destroyed. All symptoms which may be referred to the brain are to be carefully watched; as coma and epileptico-apoplectic seizures will sometimes suddenly prove fatal. When by early application of remedies this acute form of albuminuria is relieved, it appears probable that complete and permanent cure is sometimes effected; but again, in a large number of cases there is little doubt that such acute attack is followed, at no very distant interval, by the same set of symptoms, assuming a more chronic type; and that by repetitions of these attacks the patient sooner or later sinks.

Mild cases of short duration, and generally admitting of permanent relief, are often observed in children after scarlatina, occasioning the anasarca so common as a sequel to that disease.

As regards the chronic form of albuminuria, though we often find on interrogating our patients that they have before suffered from anasarca and other symptoms indicative of the previous occurrence of the acute disease, we as often meet with chronic symptoms as the first indicated by the patient; and these not unfrequently supervene in so marked a manner, and encroach so gradually on the comfort of the individual, that a practised eye is necessary to detect the disease

by the slight indications now afforded, and which, when the condition of the urine has been overlooked, have often passed for those of dyspepsia, or inactivity of the liver. As regards the symptoms in this chronic form of the affection (though nearly identical in kind), we have them present in a less marked degree than when characteristic of the acute disease. The pain in the loins is much less severe, and sometimes absent. Ischuria, as in the acute form, is not necessarily a symptom, and more commonly, as stated before, large quantities of urine are voided; from 70 to 100 ounces per diem being no uncommon discharge. Anasarca is frequently wanting as a symptom, or only indicated by slight œdema of the face; thus the under eyelids are occasionally swelled, and that only in the morning, and sometimes so slightly that the patient does not observe it. Dyspeptic ailments, with irritability of the stomach, are often present; and when complained of as producing vomiting may seem to guide us to the examination of the urine, and consequent detection of the true nature of the patient's disease. In this chronic form of the complaint it is often observed that thus the urine becomes a source of irritation to the bladder, causing the patient to leave his bed several times in the night for the purpose of making water. This condition is not necessarily connected with a discharge of lithates or lithic acid, which are the common deposits in albuminuria, nor with any peculiarity of the excretion as yet ascertained.

There are many complications attendant on this disease of the kidneys, dependent in all probability on the state of the blood, though we are unable at present to trace the manner in which it influences the solids. It may be well to remark, however, in connexion with this subject, that the deficient proportion of albumen and hæmatosine, the one observed in the early the other in the later stages of the disease, are as prominently marked in certain cases of leucorrhœa going on to chlorotic anæmia, as in the disease of which we are now treating; and thus I have had occasion to prove the presence of urea in the blood, and that too in considerable quantity, in a case of the mild form of albuminuria occurring after scarlatina, and which was rapidly cured. These facts would seem to show that the state of the blood in albuminuria requires further experiment. The organs most commonly implicated in albuminuria, in addition to the kidneys, are the heart, the liver, and the brain; and in examining cases it is of great importance to ascertain their conditions, by physical signs, as well as by the evidence to be obtained from symptoms described by the patient. The state of the brain especially should be watched, as death is commonly occasioned by implication of that organ. In many cases, however, œdema of the glottis, with more or less bronchitis or sudden effusion into the pericardium, closes the scene.

The treatment of acute albuminuria differs materially from that adapted to the relief of the chronic form of the complaint, and the simplest means are sometimes capable of effecting a cure. This is remarkably the case in some instances of albuminuria, which follow scarlatina. In other cases, however, the acute form of the disease is attended with violent symptoms, requiring the active interference of

treatment for the preservation of life; and this remark applies to some few cases of anasarca occurring after scarlet fever, though, as has before been said, those cases are for the most part mild in character.

In acute albuminuria I have always found the greatest benefit from treating the disease by the application of remedies which act upon the skin. The favorable results which have been observed from the use of antimony may be ascribed purely to its diaphoretic action; and further than this, I am inclined to prefer the use of ipecacuanha or Dover's powder, in which the opium assists us greatly in obtaining a ready action of the skin. The warm bath every other day, with acetate of ammonia and Dover's powder taken in a draught twice in the twenty-four hours, combined with the occasional administration of saline purgatives, will generally be found to afford relief in acute cases unattended with any inflammatory complication.

When, however, bronchitis or pneumonia are discovered to exist, we must have recourse to depletion with mercurials, but may still continue our diaphoretics as part of the treatment. As regards depletion in the acute stage of albuminuria, all that we know of the state of the blood in that disease would lead to its disuse, as a remedy having a tendency to induce the chronic form by decreasing the proportion of the red globules of the blood; and though I have occasionally observed benefit from the use of the lancet or cupping, I do not believe that it is at all superior to the diaphoretic plan; and unless rendered imperative by the presence of inflammatory complications, experience has made me averse to its use in every form of this disease. The strong objection to the use of mercury expressed by many writers on this subject, though it would appear justified by the results of some few cases which have been submitted to mercurial action, is not so strongly impressed upon my mind as to induce me to reject it altogether as a remedy in acute cases, even when no complications exist. It appears to relieve the kidney greatly, but care must be taken in its exhibition, as its effects are rapidly induced, profuse ptyalism sometimes following the employment of only two or three grains of calomel.

In the more chronic form of the disease, diaphoretics are almost as necessary as in the acute stage, but we must now be careful not to produce a depressing effect upon the system. Patients who are under diaphoresis should be constantly watched, and the remedy should be omitted on the first signs of loss of power of the pulse.

The free use of purgatives is of the greatest importance in commencing the treatment of the chronic form of the disease, and is a most powerful means of lessening the painful tension of the skin produced by anasarcous effusion, and often relieves the patient in a surprising manner from the tendency to coma. The anæmia which exists in the chronic form of albuminuria is best remedied by those medicines which are known to influence the blood, as the ferruginous preparations. The lactate of iron in five grain-doses three times a day, with some mild tonic, as calumba, is the best form of medicine with which I am acquainted.

As regards local treatment, counter-irritation is greatly to be ad-

vised in cases of chronic albuminuria which are not far advanced; I have known setons and issues in the lumbar region to be of much assistance in obtaining an early cure. Diuretic medicines should be avoided in most cases, as they are often observed to increase the distress when the pulse is hard, and the quantity of albumen excreted is large. In some cases, however, the ischuria which is occasionally observed may be relieved by a combination of digitalis and squills, but my conviction is, that as a general rule they had better be avoided.

SECT. VI. DISEASES OF UNCERTAIN OR VARIABLE SEAT.

ART. 24.—*On the Treatment of Acute Rheumatism.* By P. M. LATHAM, M.D.*

It needs little else than a perusal of the instructive volume from which the following observations are extracted, to convince us of the immense importance of a prompt and scientific treatment of acute rheumatism. On this point the remarks of the author are worthy of implicit confidence, being the result of labours conducted under circumstances the most favorable to the eliciting of truth; namely, those of extensive experience united to and guided by high scientific acquirements. In his tenth lecture, the author enters upon the consideration of the several indications towards which the curative endeavours of physicians are generally directed, and first of *bloodletting*. The power of this remedy, he observes, carried to its full extent, is in many cases undoubted, the entire disease being rapidly subdued by it, but in other cases it is far from being efficacious, or may even prove positively injurious. Upon the whole, therefore, he decides that the practice which proposes to cure rheumatism, at any cost of blood which may be needed, is an uncertain and a dangerous one.

Still, he observes, venesection is among the remedies of acute rheumatism, not needful in all cases, but expedient in many. "It is expedient to abate vascular action when it is excessive, when the patient is robust and young, and the disease has arisen accidentally in a healthy constitution. . . . . But in the young, robust, and previously healthy, where vascular action is not excessive, and in the old, the feeble, and the previously valetudinary, even when it is, venesection is best omitted. There are other remedies which, without the help of bleeding, may be trusted to for its safe and effectual cure."

"Summarily, then, I would venture to say of venesection, employed under the most suitable conditions, and in the most suitable measure, that it is to be trusted, rather as preparatory and auxiliary to other remedies, than for its own exclusive power in acute rheumatism. It may often render the disease more curable by other means; but seldom cures the disease itself."

* Lectures on Subjects connected with Clinical Medicine, vol. i.

Of opium he says, that as the pain is often severe, "the dose must be large, and often repeated, which is to reach it and lessen it. In the severer cases, and when the whole treatment is left to the sole remedial power of opium, the measure and frequency of its dose must be enough to *subdue*, if it is to have a fair chance of tranquillizing."

Upon the whole he regards the indications of treatment founded upon the state of the nervous system as safer than that founded upon the state of the vascular, and he looks upon opium consequently as a better remedy than venesection, and to be preferred to it, if we are to follow one of the two indications singly, and to use one of the two remedies only.

The third or derivative plan of treatment which seeks to obtain from the abdominal viscera a large evacuation of their secretions is thus spoken of. "The mode of proceeding is thus: ten grains of calomel are given at night, and a draught of salts and senna in the morning; and the same are repeated night and morning, as long as they can be well borne, and continue to produce their effect. The evidence that they are well borne, is that they occasion no distress, and the desired effect is that they bring away dark or bilious evacuations. If they induce tenesmus, and stools of pure bile or mucus and blood, it is a sign that they are doing injury, and should be withheld." This practice, which is due to Dr. Chambers, is strongly commended by the author. "In three days there is often a signal mitigation of the symptoms; and in a week I have seen patients who have been carried helpless into the hospitals, and shrieking at the least touch or movement of their limbs, risen from their beds, and walking about the ward quite free from pain." And again, "if in the treatment of acute rheumatism you were to choose one indication, and abide by it, and to trust to one class of remedies and to one only, you would find more cases that admit of a ready cure by the method now described, than by either of the two former. You would find the aggregate of morbid actions and sufferings which constitute the disease, more surely reached and counteracted, and more quickly abolished by medicines operating upon the abdominal viscera only, than by those which influence either the blood-vessels only, or the nerves only. . . . It has appeared to me not only to bring the disease to a speedier conclusion, but to prepare the way, for a more rapid convalescence than the other methods."

Having thus spoken separately of the three methods of treating acute rheumatism, by taking the state of the vascular system as the main indication, by regarding chiefly the condition of the nervous system, and thirdly, by producing a derivative effect upon the intestinal canal, the author proceeds to remark that although each may in certain cases be successful singly employed; that the most successful mode of treatment is a compound of the three: "For," he observes, "I believe that by the judicious use of opium you may spare blood, and by the judicious use of bleeding you may spare opium; that by calomel and purgatives properly administered you may make bleeding and opium less needful, and that by bleeding and opium discreetly employed you may leave less to be effected by calomel and purgatives."

Of colchicum, Dr. Latham remarks, that "single-handed it cannot

be trusted for the cure of the severer cases, but it can in the milder, and I have so trusted it, but I do not recommend the practice. Colchicum given alone, has been slow, even in these milder cases, of making its curative impression. Many days have generally elapsed before it has produced any abatement of swelling and pain, of vascular action and fever; and then, not until it has *begun to purge smartly* and *even painfully*. Finding then that in the milder cases I had no fair chance of obtaining from it the virtue of a remedy without running some hazard of its acting as a poison, I considered it much too hazardous an experiment to commit the treatment of acute rheumatism to it, mainly or entirely, in the severer cases."

[The customary modes of exhibiting colchium, is to combine it as an auxiliary to other medicines. Dr. Latham objects to its being so employed, but reserves it for special emergencies, when he trusts to it with great confidence. His words are these:] "When by venesection and by opium, and by calomel with purgatives, excess of vascular action, and fever and pain are abated but not entirely abolished; or when pain and swelling do not subside in proportion to the abatement of the vascular action, then I invoke the aid of colchicum, and give twenty or five and twenty minims of the wine of the seeds or the root, twice or thrice a day, and I often find the disease proceed uninterruptedly to a cure."

[The author likewise trusts to colchicum in cases of relapse. As he observes, he gives it without combination, so that there can be no hesitation in allowing that the beneficial effects are essentially due to its specific virtues, for the cure has occurred prior to the production of any irritation of the bowels.] (pp. 180-218.)

ART. 25.—*On the Treatment of Scrofulous Diseases.* By M. SANDRAT.

(*Bulletin de Thérapeutique. Encyclographie Médical, Août.*)

[The expensiveness of the preparations of iodine as general remedies in the treatment of a class of diseases which for the most part affect poorer portions of the community, and fall to the care of charitable institutions, led the author of the present communication to devise a plan of treatment which should as far as possible be independent of iodine, and yet be not less efficacious. The medicines which he employs with this intention are not new; the extract of walnut shells in particular (vide 'Abstract,' vol. I, p. 79,) has been extensively used in Germany, but the order in which he exhibits them, invest his communications with a certain degree of utility and interest. As may be supposed, M. Sandrat attacks at the same time the general health, and the local disease: His plan is as follows:]

1. He takes care in the first place to keep his patients upon a generous diet, consisting of roast or fried meats, bread and vegetables, with wine or wine and water, according to circumstances. A mixed diet is found by him to agree with the majority of patients better than one exclusively animal or vegetable.

2. He is very particular to enforce exercise in the open air, until a slight sense of fatigue is induced.

3. Three sorts of baths are employed by him; the gelatinous, the alkaline, and the sulphureous; others are also occasionally used, as the alcoholic and the iodine, but their expense precludes their general use in hospitals. The gelatinous baths are intended to soften the skin and subdue irritation either general or local.

The alkaline baths, which is made either with soda or ordinary soap, are indicated when slight stimulation is not injurious; when a greater degree of stimulus is wanted, in cases of flabby ulcerations, he is in the habit of prescribing sulphureous baths, as they do not produce the relaxing effect upon the tissues which always follows the use of plain baths in scrofulous habits.

4. In addition to baths, the author makes use of three principal internal medicines; these are iodine, the extract of walnuts, and steel.

Iodine is given under different forms; as a tincture,—under the form of hydriodate of potash,—in simple solution,—in pills of the iodide of iron, or lastly as the proto-iodide of mercury, or as it is found in the cod-liver oil. Whatever be the preparation exhibited, the author agrees with Lugol in recommending the dose to be small. He complains, however, that the tincture of iodine, the iodurettcd hydriodate, and the iodide of iron too readily decompose; the cod-liver oil he finds too nauseous; the iodide of potassium, therefore, in solution either simple, or with the addition of iodine is the formula which he generally prefers. He adds that these medicines have been serviceable when combined with others, which he is about to mention, but that as he has latterly tried these without the iodine with equal success, he does not consider that the latter is deserving of the extreme laudation which it has received at the hands of some physicians. Indeed he thinks that he is now able to replace iodine with a medicine equally efficacious, and more easy of administration. This medicine is the extract of green walnuts.

The ordinary form in which the extract is exhibited, is that of syrup of which the patient takes a teaspoonful several times a day. By this treatment, he states, that the apetite is increased, digestion is improved, and the scrofulous aspect is gradually dissipated.

As regards steel, M. Sandrat exhibits it chiefly as an auxiliary, and considers it one of incontestable power. He gives it therefore in all anæmic cases, and especially in young scrofulous females.

[It is not an opinion confined to M. Sandrat, that the power of iodine in scrofulous disease has been much overrated, more particularly by its great advocate M. Lugol. Baudelocque (Traité des Maladies Scrofuleuses) does not hesitate to avow that he has frequently been disappointed in it, and that it fails to cause the absorption of tuberculous matter. We are disposed from a very considerable experience of iodine in all forms of scrofulous disease, to range ourselves on the side of Lugol, and are inclined to think that much of the discredit which is attached to the medicine, may in France be traced to a spirit of jealousy, from which unfortunately the greatest names are not entirely exempt. In this country it is different. As we have taken occasion to remark, in another place, (*Researches and Observations on the*

Causes of Scrofulous Diseases,) much of the want of success with iodine is to be attributed to the little discrimination with which it is given, the doses being in general too large, and too long continued. For our own parts we can conscientiously say that every day adds to our confidence in its virtues.]

Art. 26.—*On the Pathology of the Tuberculosis.*

By Dr. Cless, Practising Physician at Stuttgard.

(*Schmidt, Jahrbuch*, Heft iii, 1845.)

In this essay the author treats of the occurrence of tubercles in these several organs.

a. *The Lungs.* Here tubercles are so frequent that Louis established the principles, that, in every case in which tubercles are found in other organs, they exist in the lungs also; that tuberculosis in the lungs is always much further extended than anywhere else; and that in consequence, the presence of tubercles in the lungs would appear a necessary condition of their development in any other part.

Recently, however, exceptions to this have been not unfrequently observed.

Amongst 152 cases of adults suffering from tubercle, that were examined by the author, (where tubercles were present either in the peritoneum, the pleura, or in the bronchial and mesenteric glands simultaneously;) he found 6 where the lungs were free from tubercles; also in some special cases the tuberculosis was more important and further extended in some other organs, (the peritoneum and lymphatic glands,) than in the lungs. Yet the rule ever remains standing, that in the great majority of cases, tuberculosis of the lungs forms the predominating affection, although frequently during the life-time, disease in the other organs *appears* the more intense.

In childhood, however, tubercles of lungs do not seem to predominate, but rather tubercles of the bronchial and mesenteric glands. Nevertheless, the observations of the author and of Barthez and Rilliet tell for the contrary. With children, as well as with adults, the lungs must be held to constitute the chief seat of tubercles, save that with them the exceptions are somewhat more numerous than with adults.

The author further found, in more than three fourths of the cases which he examined, tuberculosis simultaneously spread over several organs. The number of cases of insulated tuberculosis in childhood is very small; the tendency towards general diffusion being strong. The author rarely found one lung only affected with tubercles; when that did occur, it was in the majority of cases the right lung which suffered, that being also, when both were diseased, the one most extensively affected. This observation refers equally to children and to adults. In most of the adult cases observed by the author, the tuberculosis of the lungs advanced to the formation of vomicæ; this however occurred less frequently in children. Barthez and Rilliet found them in not quite one third of the cases which fell under their notice. It is chiefly the acute tuberculosis which causes

death before the ripening of the tubercles, and this is with children by far more frequent than with adults; yet chronic phthisis often exists without ever arriving at the formation of vomicæ. Death occurs with children more frequently by the intercurrence of other diseases, (particularly acute hydrocephalus).

As concerns the seat of tubercles in the lungs, they begin usually in the apex and in the upper lobe, and spread from thence to other portions of the organ. It is but seldom that an exactly equal degree of intensity and development of tubercles is observed at the same time, in both the upper and lower lobe, (and when it is so, it is usually a concomitant of the miliary form). In some cases, indeed, the author found the seat of the tubercles in the lung to be exclusively in the lower lobe, but then the tubercles were insignificant and secondary: more frequently, indeed, in a complete case of pulmonary phthisis the disease was found to have been confined to the upper lung until its terminal stage.

B. *Bronchial glands.* Among 152 cases of adult bodies with tubercles which he examined, the author found 8 only with tuberculosis in the bronchial glands. These 8 arrange themselves into three classes: 1st. Those accompanying the more diffused tuberculosis; these were four in number. 2dly. Those accompanying tuberculosis of the lung without considerable diffusion of the disease in any other organ; including 2 cases. 3dly. Those in which it was the only, or at least the prevailing affection; they also were 2 in number. None of these individuals were above 30 years of age.

It is an established fact, that with children the bronchial glands are very frequently, and by far more frequently than with adults, the seat of tubercles. Some writers have however gone too far, in asserting that the phthisis of children is chiefly or alone a consequence of bronchial tuberculosis. The author never found tubercles in these glands alone, but always accompanied by simultaneous affections of other organs.

Barthez and Rilliet maintain that very few cases of insulated bronchial tuberculosis are met with, but that they are generally united with corresponding affections of the pleura and lungs. Bertin also assigns a secondary place to bronchial phthisis, and according to him the tuberculosis of the bronchial glands diminishes in frequency from one decade of years to another, and never occurs after the close of the third decade. Barthez and Rilliet knew no important difference in the frequency of the occurrence of bronchial tubercles in the several ages of childhood, or at most observed a very small preponderance in young children, while Bertin remarked the disease three times as frequently between the ages of 2 and 8 years, as between 9 and 14 years.

C. *The larynx and the trachea.* Pathologists are at variance upon the nature of ulceration of the larynx and of the lining membrane of the trachea in phthisical patients; Louis declares that he never in one single case found tubercular granulation in these organs; he therefore attributes the origin of the ulcers almost always to a simple inflammatory process, occasioned by the irritation of the expelled matter frequently resting on its way; yet it has recently been placed beyond all doubt, (by Rokitansky and Hasse,) that a third

part of the ulcers found there, are really of tubercular origin, while certainly the erosions so frequently observed seem to be the product of a simple inflammatory, catarrhal, or aphthous process. The author also in many cases convinced himself in the most decided way, of the tuberculous nature of these ulcers, yet he found some where no tuberculous formation was to be discovered.

Deep ulcerations appear most frequently to be seated in the larynx; and superficial ulcers are more frequently found in the epiglottis and trachea.

Amongst the cases observed by the author, not a single one appears where the tuberculosis or ulceration of the larynx and of the trachea formed the primary and predominating affection; it was always secondary and attendant upon the simultaneous disease of the lungs.

According to Louis, ulcerations of the larynx and trachea are twice as frequent in men as in women; and according to Hasse they occur most often between the 20th and 25th years of age. In childhood these ulcerations are very rarely found.

D. *Pleura and peritoneum.* Tubercles in serous membranes are ordinarily regarded as signs of tubereulous inflammation, (pleuritis, peritonitis, and tubereulosis;) but a true inflammatory process is not always connected therewith. This tuberculosis is with phthisical patients of rather frequent occurrence, and attacks all ages from early infancy to advanced years; but it is perhaps with children rather more frequent than with adults.

If with adults the pleura is more frequently affected than the peritoneum, yet tubercles of the peritoneum when they do occur, are more general and more productive of serious after consequences; so also the symptoms produced by tubercles of the peritoneum appear with more intensity and virulence.

Chronic peritonitis when not produced by organic disease of some of the abdominal organs, is founded almost without exception on tuberculosis of the peritoneum, and very frequently a simultaneous affection of the lungs is more or less and sometimes altogether masked by the appearance of peritoneal disease. Tubercles of the pleura and peritoneum present themselves it is true, most frequently as secondary affections, and principally as the product of intense universal tubercular dyscrasia; yet they do occasionally appear as primary, and even as the only tuberculosis. So also the author observed upon the pleura, broad, flat, confluent tubercles, single and insulated; the same upon the peritoneum, where he also remarked a peculiar appearance of the tubereular matter. Each single tubercle was at its base surrounded by a black or blue-black ring, formed by melanotic segment, sometimes a red border around the tubercles of the peritoneum and pleura, was also seen.

According to the observations made by the author, the peritoneum and mesenteric glands are seldom affected with tubercles at one and the same time, indeed, a high degree of the disease in the one, appears almost entirely to arrest or prevent it in the other. This was established by Barthez and Rilliet; but Rokitansky asserts, on the contrary, that the result of tuberculosis of the peritoneum is usually tuberculosis of the abdominal and lymphatic glands.

E. *Heart and Pericardium.* Tubercles on the pericardium range amongst pathological rarities, and do not easily attain to a serious and excessive degree. According to Rokitansky they usually arise out of the tubercular metamorphoses of an inflammatory exudation; this, however, in one case observed by the author, was not confirmed.

With children, tubercles in the pericardium and upon the serous membranes, occur more frequently than with adults. The author never saw tubercles in the muscular tissue of the heart; they do indeed present themselves there very rarely, and thence spread. Upon the endocardium and upon the lining membrane of the vessels, according to Rokitansky they never appear.

F. *Intestinal Canal.* Tuberculosis of the intestinal canal appear in two states; as submucous tubercular-granulation and infiltration; and as ulcer. (Probably many enlargements of the mucus-follicles and erosions are mistaken for tuberculosis.)

The author found in 83 cases, (that is, in more than the half of those which he observed,) that the small intestine was affected; and in about a fourth part of them (namely 37) he found the large intestine also suffering. Louis, on the contrary, observed with 5 out of 6 of his phthisical patients, ulcers in the small intestine.

Tuberculosis of the intestinal canal is of frequent occurrence at all ages. It is found the least often in extreme old age, and in the earliest periods of childhood. It is to be remarked, that in the experience of the author, the occurrence of tubercles in the intestine was less frequent between the 30th and 40th years of life than in any other period, whilst in the preceding and following decenniums with two thirds of the tuberculous subjects, tubercles were found in them. Of these two thirds, it apppeared that between the ages of 30 and 39 the half were diseased in that organ.

As concerns the affection of the large intestine, it appears that between the 20th and 30th years of life there is strong disposition in this disease to seat itself there, since more than the half of the whole cases in which it was found there occurred in this period. In no single case of tuberculosis of the intestine did the author find the disease existing there alone; neither did he ever find it predominant and inclined to spreading when there were simultaneously existing tuberculosis of the other organs. It consequently appears that it never here exists as an isolated or primary affection.

The author only once found ulcers in the stomach and œsophagus; Barthez and Rilliet, on the contrary, remark that the stomach of young children appear to be more frequently affected than those of older persons, the reverse of which is observed with regard to the small and large intestines.

Ulcers in the duodenum are very rarely found; but when present, according to the observation of the author, they most frequently commence near the lower portion.

As concerns the affection of the large intestine it is most commonly found existing simultaneously with that of the small intestine, though it is indeed in some exceptional cases found where the small intestine remains healthy.

The cæcum and ascending colon are frequently attacked by tuber-

culosis: the further downwards the less frequent the affection; the author never found it reaching below the descending colon.

Whilst the tuberculosis of the large intestine is of more rare occurrence than that of the small intestine, yet in some individual cases, the former reaches an intensity never observed with the latter.

G. *Mesenteric Glands.* In these glands both Louis and the author found tuberculosis in a fourth part of their phthisical patients, and at all ages; yet they appear more liable to attack in advanced age than in the prime of life. They were seldom affected in any preponderating degree between the 30th and 39th years of life, whilst during the preceding, and still more during the following decennium, the proportionally largest number of cases was presented. With children, however, the tuberculosis of the mesenteric glands appears to be somewhat more frequent than with adults of middle ages; (but with them it seldom presented isolated or in preponderating degree, and mostly only as the accompaniment of a general and diffused tuberculosis.) Barthez and Rilliet found indeed the existence of tubercles here in almost the half of their cases; but only in one of 22 children were they of any serious extent. They found also that in these glands they scarcely ever appear before the third year.

The author thinks that it is without reason that these glands, together with those of the bronchia, have obtained so prominent a degree of attention in our days, amongst children's diseases. The too conspicuous rank given to them is caused by a mistaken opinion respecting the enlarged bellies of children, to which this character has been given; these enlargements, however, are often altogether independent of tuberculosis or other degeneration of the mesenteric glands.

So far as concerns the connexion of the tuberculosis of these glands with that of other organs, it appears only, in general, associated with further developed deposits in other organs, as the sign of a high degree of tuberculous dyscrasia, and holds only a secondary and subordinate place. That organ in which tuberculosis most frequently accompanies tuberculosis of the mesenteric glands, is the intestinal canal; yet tubercles in the mesenteric glands are nevertheless independent of the formation of ulcers in the intestinal canal. The latter frequently occasions simple redness and swelling of those glands.

Mesenteric and peritoneal tubercles are seldom found simultaneously. In one case, indeed, the author found fully-developed mesenteric tubercles (with deposition of bone-earth) in a female patient aged 41, who died of pulmonary phthisis. The lungs with the bronchial and mesenteric glands are the only organs in which the author has observed the process of earthy deposition.

H. *Liver.* In adult age this organ is one of those most rarely attacked by tubercles, which when they do occur scarcely ever progress very extensively. The tuberculosis stands here in strong contrast with carcinoma whose especial seat is in the liver. With children, however, tubercles of the liver are more frequent. Barthez and Rilliet found their existence in this organ in one fourth of the cases of children affected with tuberculosis, but generally in a secondary and subordinate degree as compared with their presence in other organs.

I. *Spleen.* With adults tubercles are here also seldom found, and

scarcely ever do they arrive at any extended development or occur in large masses. But it is otherwise with children, with whom Barthez and Rilliet found them present in more than a third part of their cases; and in intensity exceeding on the average that of the other organs. Tubercles in the spleen are, according to the author, not only very frequent with children, but, if we except the lungs and the serous membranes, in no other organ do they so often appear. The volume of the spleen is thereby usually increased; it sometimes, however, is observed that the spleen is quite covered with them and yet retains its ordinary size, the parenchyma being sometimes softened and at other times of natural consistence.

It is worthy of observation that, notwithstanding the frequency and intensity of tuberculosis of the spleen in childhood, yet it never appears as a primary or insulated phenomenon. In the majority of cases tubercles of the spleen are the concomitants of diffused and general tuberculous disease. Never during life are they known by any separate or special symptom.

The author has often observed the commencement of the softening process of tubercles of the spleen, but never their actual and entire liquefaction accompanied with the formation of vomicæ.

The disposition of the spleen to tuberculosis does not appear (as is the case with the bronchial glands) to be entirely lost with old age.

K. *Kidneys.* Here tubercles are presented at every age; they are, however, decidedly more frequent in children than in adults, yet they are with them also subordinate to other affections, and seldom attain an intense degree.

The parenchyma of tuberculous kidneys has always been found by the author in a perfect condition, with the exception of one case, where it was found considerably congested. In the greater number of cases, the tuberculosis of the kidneys was almost entirely unaccompanied during life by any appearance of disease proceeding from it. With some adults in the last stage of phthisis, diabetes insipidus appeared, which, however, the author regarded only as a symptom of general wasting, and independent of the tuberculosis of the kidneys, (analogous to the colliquation of diarrhœa) since in the last stage of phthisis and with unaffected kidneys he repeatedly observed the same.

With a boy of 12 years old, in whom the tuberculosis of kidney had reached the highest degree, the urine was strongly albuminous, without the kidneys presenting any appearance of granular degeneration (Bright's disease).

L. *Uterus, Fallopian tube, and ovary.* The tubercular degeneration of the internal genital organs of women has received too little attention. The author observed it six times; and it is by no means of infrequent occurrence, though Rokitansky asserted that tubercles are never found in the ovary.

The author saw tuberculosis of the uterus under three forms: 1st. As tubercle deposited in the substance. 2d. As resting upon the inner superficies. 3d. As converting the whole substance into tubercular matter.

In all cases of tuberculosis of the genitals, there also existed simultaneously the same disease in the adjacent regions of the belly

and bowels, but the former appeared only as secondary, and as the expression of a high degree of tubercular dyscrasia. Conspicuous symptoms marked the affection only in one case, in this its similarity with those of cancer of the uterus was worthy of observation.

At all ages, and also before puberty, the author found the tuberculosis in the parts indicated. Rokitansky observes, of the tuberculosis of the uterus, that it never extends beyond the *os uteri internum*, and that it never attacks the vaginal portion, (in which it differs from cancer.)

M. *Brain and its membranes.* The French pathologist first observed the so-named tuberculosis of the arachnoid, which is important on account of its relation to *hydrocephalus acutus.*

The author found arachnoidal tubercles in five children, between the ages of 8 months and 11 years, and with the exception of one case, the affection was always associated with acute hydrocephalus. In all these cases, tubercles existed in the lungs, and in most of them, in other organs also. Barthez and Rilliet once found tuberculosis of the meninges isolated.

Tubercle of the arachnoid easily escapes observation, for it is frequently obscure and of no great extension. Tubercles here are always found on the outer side of this membrane, between that and the pia mater, never upon the inner, whilst this is the case with the other serous membranes. These observations are quite in accordance with the appearance of the simple normal serous effusion, as well as of the product of inflammation of the arachnoid being only to be found on the outer side.

Valleix has described tubercular arachnitis in adults, and affirmed that it is present wherever, in adults, inflammation of the membrane of the brain or effusion from hydrocephalus exists. The author contradicts this last assertion.

Arachnitis with purulent effusion and hydrocephalus, are certainly often present with adult tubercular subjects, without, however, being necessarily accompanied with tubercular granulation in the arachnoid.

Tubercle in the arachnoid holds certainly a secondary place amongst the other diseased products of the brain.

Tubercles in the substance of the brain are by no means infrequent with children. According to Green they occur most between the ages of 3 and 7 years. Sometimes one single tubercle is found there, and sometimes also they are more in number. This seat is more frequently in the hemispheres of the cerebrum, than in those of the cerebellum. According to Green, in no case were tubercles exclusively confined to the brain, but they always existed simultaneously in the cavities of the chest or abdomen, yet the greater development of the cerebral tubercles induced the presumption that the disease had originated there. Barthez and Rilliet observed two cases of isolated tuberculosis of the brain. According to the fore-named authors, the coincidence of cerebral and arachnoidal tubercle was frequent. This, however, was not confirmed by the author.

N. *Lymphatic glands.* With diffuse tuberculosis it is not infrequent that the glands of the neck, shoulders, abdomen, &c., present degene-

rated tubercle; also in that case the subcutaneous cellular texture is not infrequently the receptacle of tuberculous matter, which then produces ulceration of the skin.

o. *Muscles, bones, and joints.* Although mention has scarcely ever been made of tubercles in the muscles, yet the author twice found them in the case of children suffering under the highest degree of scrofulous or tubercular dyscrasia (they were existing in the musc. soleus, glutæus, and in the tendo achilles). In both cases, tubercular disease of bones was found in the neighbourhood of the affected muscles. The tubercles were of roundish form, and from the size of millet grains to that of hemp-seed, of whitish yellow colour, and mostly solid, but some of them half-liquefied, and resembling pus. Rokitansky denied the appearance of tubercles in muscle in the form of original gray tubercles; according to him they are no more than tubercular exudations.

Tuberculosis of the bones is in a majority of cases the cause of pain in the bones in scrofulous and phthisical subjects. These tubercles also occasionally appear isolated and without the simultaneous affection of inward parts. Even with adults, tubercular affections of the bones sometimes appear.

In the joint itself also, and in its soft parts, the author once found iuberculous degeneration, (namely, in the sterno-clavicular articulation,) and at the same time the ends of the bones were carious and impregnated with tubercular matter.

The author has never found tubercles in the thyroid gland, in the pancreas, in the salivary or in the mammary glands. The testimony of Rokitansky supports his experience, that in these organs they are never presented. On the contrary, tubercles in the testicle are often spoken of by writers. Rokitansky also mentions them, and says, "they not infrequently appear there first, and spread from thence to the other sexual and urinary organs."

The frequency with which the several organs subject to tuberculosis are, in the case of adults liable to the disease, is in the following proportion: Lungs 146, small intestine 83, mesenteric glands 38, large intestines 36, peritoneum 18, pleura 13, larynx and trachea 10, bronchial glands 6, external lymphatic glands 6, female parts of generation 5, spleen 4, kidneys 4, bones and joints 3, liver 2, membranes of the brain 1, pericardium 1, altogether 152.

The proportion as given for childhood would be very different, and in advanced age also, particular exceptions occur.

The lungs at every period of life are the most liable to tuberculosis, but the cases in which the lungs remain sound, whilst other organs are attacked, are yet more scarce in adult age than in childhood; and the difference between the frequency of tubercles in the lungs, and their frequency in the organ standing next in liability to attack, is with adults much more considerable than with children.

In childhood, next after the lungs, the bronchial glands are most exposed to this disease; but with adults its occurrence there is rare, and almost unheard of after the 30th year.

In like manner, the presence of tubercles in the mesenteric glands is more frequent in childhood than in adult age, yet the difference

here is not great; and the affection of these glands is secondary in importance to that of the bronchial glands. With them, however, liability to tubercular degeneration does not appear to be lost with advanced age.

The liver, spleen, and kidneys are more frequently affected with tubercle in children than in adults. Of these three organs, the spleen is with adults the most rarely attacked.

Cases of tuberculosis in the serous membranes, are also in childhood more numerous than in adult age; especially in the arachnoid, and in the brain itself.

On the other hand, adults are most liable to tuberculous disease in the intestinal canal. Tuberculosis of the larynx and of the trachea, appears particularly to occur between the 20th and 40th years of life. With children it is very rare, and it is infrequent also in old age.

The internal genital parts of females may be attacked at any age; yet such affections are less frequent in childhood than in adult years.

The question whether a physiological law may somewhere be established according to which the development and distribution of tuberculosis in the several organs may be ranged, can hardly yet be answered. The assertion of Hasse, that "the development of tubercle in the different organs happens most frequently simultaneously with their greatest physiological activity," is easily confuted by matter of fact.

With regard to the difference of tuberculosis in childhood and in adult age, so much may perhaps be explained, that with a fixed tubercular dyscrasia in the organs of children, the specific matter of the disease is deposited with greater ease, and in larger abundance in the different organs, on account of the changes of tissue, and of the freedom of the function of nutrition and circulation at that period of life. Doubtless these circumstances have their effect as respects the tendency of individual organs to tubercular affection, or the contrary.

That tuberculosis has in childhood a greater tendency to general diffusion, than later in life, is an established fact. Amongst the children who fell under his notice, the author found only one case in seven, where the disease was confined to one organ or one cavity of the body; whilst on the contrary, it was with one fourth spread over all their cavities.

With adults as with children, tuberculosis manifests a tendency to general diffusion; but the disposition is more strongly marked in childhood. In one fourth only of his adult cases did the author find the affection confined to one organ, and with more than two thirds it had established its seat in all the three cavities of head, chest, and belly.

This tendency of tuberculosis to general diffusion in many organs, and to diffusion also amongst the whole human race, is the essential and proper characteristic of the disease, and has procured for it the character of being the most universal of all diseases.

ART. 27.—*On the Treatment of Diabetes Mellitus.* By G. OWEN REES, M.D. F.R.S. and Assistant Physician to Guy's Hospital.*

The treatment of diabetes proposed from time to time has varied greatly in character. It is true that for the most part it has agreed in the one particular, in consisting of means directed to the stomach; but still some of those remedies considered as the most efficacious have been such as in health greatly tend to the derangement of that organ. Among the most powerful of these may be placed opium, which, in combination with other medicines, is frequently of service in checking symptoms, and has occasionally been known so far to restore the patient as to justify a hope that permanent benefit has been obtained. As regards the stomachic remedies, we find the alkalies and acids have both been fully tried; and the alkaline earth magnesia is still highly prized, as of service in this disease, by many experienced practitioners. Nitric acid has enjoyed an equally high reputation in the hands of others; and I have recently seen apparent advantage derived from the continued use of hydrochloric acid. It has always appeared to me, however, that the cases most benefited by treatment have been those in which no special regard has been paid to a specific remedy, but where general principles have been carried out steadily, and so as to meet every emergency as it arose. The use of opium, though it is always found to diminish the quantity of water excreted, can in no way be regarded as an advisable measure, if it be exhibited in its uncombined state. Large doses become eventually necessary to keep up the effect first produced; and whatever apparent benefit may be observed in the secretion of the kidney, we find the general symptoms of the disease become aggravated, and, moreover, that considerable difficulty is experienced in desisting from the use of the remedy. The Dover's powder is a favorite medicine in this disease, and I have constantly seen the greatest benefit follow its use, and considerable relief afforded to the patient by its bringing about the partial restoration of the function of the skin. In acute cases, when pain is felt in the loins or head, the use of this remedy, combined with the hydrargyrum cum cretâ, in small and divided doses taken during the day, will be found a most valuable means of decreasing action, and with the use of moderate bleedings greatly to assist in affording relief to the drowsiness which forms a distressing symptom in some cases.

In addition to the above remedies, I know of none more applicable in the chronic form of the affection than magnesia taken frequently during the day. Warm bathing at intervals of a day or two is of great assistance; and if we can sufficiently restore the powers of one patient, this may afterwards be replaced by cold sponging or the shower-bath. It is absolutely necessary, however, that the pulse should improve, and the power of undergoing fatigue have increased, before the skin is called upon for this reaction, and the cold bath should always be taken immediately on rising from the bed, when the

* Analysis of the Blood and Urine. 2d edition, p. 171.

powers of life are recruited and in full vigour. Among the tonics which have acquired credit in the treatment of diabetes, are several metallic salts; the sulphates of zinc and iron and the phosphate and lactate of the latter, have been used with benefit. Various vegetable tonics have also at times flattered the practitioner into a belief of their efficacy. Whatever may be the plan adopted, however, one important indication should never be lost sight of, and that is, the constipated state of the bowels almost always observed in this disease.

The importance of attending to this point will at once be obvious, when we remember the emaciation so characteristic of this affection, and the propriety of affording as large a surface as possible of intestine for lacteal absorption, which cannot take place if the intestinal canal be obstructed. As regards the diet best suited to this form of disease, it appears anything but reasonable to subject the stomach to the severe discipline which has been applied by the fashion of the day in prohibiting the use of vegetable food, and restricting the patient to a purely animal diet.

All the benefit derived from this plan of treatment consists in the fact that the profession are now well aware that the diabetic stomach will not convert fibrinous and albuminous ingesta into sugar, but that any advantage has accrued to the patient is greatly a matter of doubt. Several cases, which I have seen do best, have not been so restricted as regards vegetable aliment, but have been fed upon a wholesome mixed, but restricted diet. The patient should be allowed his ordinary food, unless it be of a nature obviously calculated to produce or maintain dyspepsia; the restriction being made in quantity rather than in quality or proportion. As regards drink, not only much good, but agreeable relief from thirst, is to be obtained from the use of seltzer water, the salts contained in it probably exercising an immediate influence on the condition of the blood. Wines, spirits, and beer, should be avoided in the more acute forms of this disease, but they become necessary to maintain power in the more advanced stages.

SECT. VII. DISEASES OF THE SKIN, &c.

ART. 28.—*On the Diagnosis and Treatment of Porrigo favosa.*

By D. J. CORRIGAN, M.D.

(*Medical Times.*)

In a paper on this subject, appearing in the Hospital Gazette, Dr. Corrigan first notices the confusion arising from the varieties in description and treatment applied to the affection; the mild and intractable forms of disease of the scalp being confounded together, from want of accuracy in diagnosis; and the difference of nomenclature of one and the same disease, adopted by French and English

writers, creating so great a perplexity in this class of affections, that any one of them may be spoken of by any two writers, or two persons in conversation, each person having at the moment an entirely different disease in view.

The author's leading object is, he observes, to induce us to look on the disease as possessing a single and fixed character, incapable of subdivisions, which are as useless as they are unfounded. Whether the affection attacks a limb, or appears as a solitary areola on the scalp, or covers its whole surface, or involves a large portion of the surface of the body, its characters are unvarying. The modifications assumed to exist by Bateman, and named by him porrigo larvalis, porrigo granulata, and porrigo scutulata, are represented by impetigo, while porrigo decalvans and furfura are not pustular diseases at all. We have then remaining only the porrigo lupinosa of Bateman, or the genuine scall, possessing characters so different, that Dr. Corrigan observes, it is matter of surprise that it could ever have been confounded with any other disease. In order to distinguish the peculiar incrustation of porrigo from the scales of ptyriasis which sometimes accumulate to such a degree as to resemble the scab of porrigo—the difficulty being occasionally increased, too, by the coexistence of these two diseases—the author recommends the head to be shaved and poulticed until the entire scab disappears; the scab to be then washed clean with soap and water, so as to present a clear, smooth, red surface; upon which, within some days, a few, often not more than three or four minute particles appear, not prominent, but like dots of transparent matter imbedded in its surface; a period from seven to fourteen days will be sufficient to trace the progress of their growth; in twenty-four hours after their first appearance they become solid, depressed in the centre, and of a pale yellow or sulphur colour, having frequently a hair in the centre, presenting the cup-shaped surface of the peculiar pustule or favus of porrigo, the contained matter being so dry as to be almost friable. The growth of this cheesy, friable substance now goes on very rapidly, the colour changing to a grayish-white, and at length accumulates to such a degree as to resemble lumps of mortar sticking on the head, with a peculiar odour resembling that from urine; but the singularity of its development is, that if a portion of the scab be removed, by slight traction or poultices, there is merely the red surface beneath; no ulceration of the skin, no formation of purulent matter, which in drying, might form the thick scabs lying on the surface, thus evincing a mode of growth, in the incrustation itself entirely independent of any ulcerative process or suppuration in the skin. If an eczymatous scalp be similarly treated, the scalls are observed to form gradually on the inflamed skin, the peculiar favi of porrigo never appearing; or, if the disease be impetigo, the cleared surface is seen to pour out, like an oozing, a semi-transparent, honey-coloured secretion, which soon dries into a soft, greenish-coloured scab; but here, as in eczema, and all the other diseases of the scalp, the peculiar pustule of porrigo, running through the above-described stages, is absent.

We have, however, Dr. Corrigan observes, a still more accurate means of diagnois in the ordinary achromatic microscope for medical

purposes, with a magnifying power of 300 diameters, which furnishes a means of instantaneously and with certainty distinguishing the disease under consideration. Three drawings were made at the moment of examination by the microscope, by his friend and clinical clerk, resident at the hospital, Mr. Rambaut, the first being a representation of the pus-globules in recent matter taken from a case of impetigo, and presenting the same appearance as those of ordinary pus.

The second represents a portion of the dried scab of impetigo, which being moistened with a little water, and placed under the microscope, exhibited the appearance of an amorphous mass, the portions comprising it being somewhat like the scabs of the epidermis or mucous membrane. The third drawing exhibits the appearances observed in a portion of the moistened scab of genuine porrigo, appearances so closely resembling those of a cryptogamic plant, that any one who has seen them, Dr. Corrigan observes, cannot hesitate to consider porrigo as consisting in the growth of fungi in the human skin. To Dr. Bennet, of Edinburgh, who has published perfect drawings of this parasitical vegetable, in a paper contained among the Transactions of the Edinburgh Royal Society, he states that he is indebted for the first demonstration of this singular fact, the discovery itself being due to Ehrenberg, of Vienna.

Dr. Bennet has discovered the cryptogamic plant of porrigo in the common house mouse; and this, Dr. Corrigan observes, may have more to do with the peculiar odour of the disease than might at present be suspected, and may serve to illustrate some intimate connexion between man and the lower animals in the propagation of disease. The nature of porrigo, he adds, may now, perhaps, serve to explain its peculiarity of growth accumulating rapidly upon the surface, independent of any secretion of pus to form the mass of the scabs; the growth of a single favus of porrigo, too, if observed, will be seen to take place at the circumference, its height being acquired at the edges, all round the circumference, while it remains hollow in the centre, this being in accordance with what is observed in many cryptogamous plants, which, having exhausted their pabulum in the centre, continues to grow out in a circle. Dr. Corrigan concludes by observing that the disease, as he has always seen it, is chronic, and is not confined exclusively to the scalp, having observed it now and then on almost all parts of the body, in some cases consisting of only two or three favi on the back of the neck.

He does not believe it to be contagious; and is strengthened in this opinion by the failure of attempts made by Bennet and others to inoculate with the disease; its non-contagious nature, he observes, contrasts strongly with impetigo, which spreads so rapidly among children.*

As evidence of the rarity of the disease in Ireland, he observes that all the cases he has ever seen would hardly amount to 30, an additional contrast to impetigo, eczema, ptyriasis, &c. of the scalp, which are so

* Dr. Bennet has since succeeded in inoculating from favous pustules.—Ed.

common. He has never seen it in private practice, or in respectable life, and suggests the possibility of its being propagated from an inferior animal, like cow-pox, the odour of the mouse (a well-marked diagnostic sign) being so strong in the disease as to strengthen the supposition of its being derived from that animal, on which Dr. Bennet has discovered the same parasitic plant as in porrigo; poverty or sickness reducing the living body to a state fit to constitute a nidus for a parasitic plant.

Reflecting on the nature of the disease suggested to Dr. Corrigan the employment of an ointment composed of five or ten grains of oxymuriate of mercury to an ounce of ungt. cetacci, a remedy on which he places much reliance; in the latter proportion it sometimes gives pain. A small portion of the ointment is rubbed on the affected part every day, and it has not produced salivation in any instance. The author records three cases in which the remedy was attended with marked success, but in one only, he observes, has the relief experienced lasted sufficiently long to admit of its being considered a cure; the disease has again and again disappeared after having been repeatedly subjected to various modes of treatment by Dr. Corrigan, and by gentlemen at other hospitals, but continued to reappear until put under the use of the foregoing ointment, in February last, since when the patient, who lives in the neighbourhood of Whitworth Hospital, has been entirely free from the disease.

Art. 29.—*On Mercurial Frictions in Smallpox.* By M. Goblin.

(*Revue Médicale et Encyclographie Méd.*, Juilet 1845.)

Mercurial frictions were used for the first time by the author in the year 1832. "I commenced," he observes, "at first by anointing only the eyelids, the nostrils and the angles of the mouth. Soon after this operation, the pustules, which were more or less advanced towards suppuration, appeared to be arrested in their progress, and speedily dried up and desquamated. This action was so decided, that in subjects in whom the disease was of the confluent type, the eyelids did not participate in the erysipelatous tumefaction which existed in the other parts of the face."

Encouraged by these results the author, in succeeding cases, carried his inunction to a greater extent, including the whole face and neck. The effects were equally satisfactory. The frictions are commenced as soon as the pustules are developed, the quantity of the ointment being proportioned to the confluence of the eruption. They are to be repeated two or three times a day, and persisted in until desquamation commences.

According to M. Goblin, the action of the mercury is strictly local. The success of the plan is confirmed by the testimony of M. Dufresne, who was sent by the Prefect of the Seine, to investigate the epidemic in which M. Goblin acquired his experience of the advantage of the remedy.

[Dr. Corrigan in his Lectures on Smallpox, published in the 'Medical Times,' recommends the application of the emplast. plumbi melted with almond oil, and spread over the face with a camel's hair brush. The

compound is to be allowed to dry, and to remain until it is detached by desquamation. Rilliet and Barthez (Traité Cliniques des Maladies des Enfans,) make use of a pomade consisting of 24 parts of mercurial ointment, 10 parts of yellow wax, and 6 parts of black pitch. Both of these applications are stated by their respective partisans to be effectual in preventing the unseemly sears of the smallpox.]

Art. 30.—*Case of Lupus cured by insertion of a Seton.* By Dr. Henry Kennedy.

(*Dublin Journal of Medical Science*, Sept. 1845.)

In the month of March 1843, a servant applied at St. Thomas's Dispensary for relief. She was labouring under lupus, not only affecting the nose, but spreading over the greater part of the face. She was about 30 years of age, and was otherwise healthy. She stated it had commenced on one side of the nose, from which spot it had gradually spread, and that it had existed upwards of two years. As it usually is, the disease was least marked on and about the nose; in fact, on the cheeks and forehead it was of a different character. It might be described here as being of the nature of tubercular lupus; the entire skin was thickened and red, and had lost its supple feel; besides this a number of hard tubercles could be felt almost in every direction: and though no ulceration had taken place over them, still in several places there was an appearance of ugly cicatrices, disfiguring the entire countenance. She was directed a course of Plummer's pill, and to bathe the face assiduously with lukewarm water. This plan was pursued steadily for some time, but without any benefit, and she was then directed to take the solution known under the name of Donovan's solution. This also was persevered in, and continued till her health began to suffer. It was then given up, and an issue was put in the arm, the bathing being directed to be continued. In the course of a month, a manifest improvement had taken place; the skin generally had assumed a more healthy appearance, and the tubercles had manifestly lessened in size. It is enough to add, that the issue was kept in seven months, when it was discontinued, all trace of the disease having disappeared. As a matter of precaution, however, she was again directed another course of the solution. She has since then continued quite free of the disease.

The use of the issue in this instance was not my own idea, but I am unable to state where I learned it; nor, from want of time have I been able to ascertain whether it be a plan of treatment recommended in any of the standard works on diseases of the skin. I think it may be asserted, however, that it is not one in common use in such cases. The case detailed appears to me a very strong one in proof of the efficacy of this particular line of treatment. Every one knows the extreme obstinacy of many diseases of the skin, and particularly those which appear on the head and face. Some forms of porrigo, as also that form of ulceration which has been described by Dr. Jacob, afford but too well-marked examples of this. The number of young females, too, which one sees disfigured by the more common form of lupus is very consi-

derable. In all these cases I cannot help thinking that an issue would form a most important part of the treatment; further experience, however, can only determine the point.

ART. 31.—*On the Treatment of Scabies.* Every practitioner has had occasion to lament that the best remedy for this disease is one of so disgusting a nature as is the sulphur ointment. The profession therefore will be glad to learn from the following communication from Mr. Stiff, that the sulphur may be dispensed with, and that the essential portion of the compound is the adipose matter. Mr. Stiff states, that during the last six months he has frequently tested the action of sulphur in scabies, and considers that it may be cured without it. The truth of this assertion is rendered more evident, he thinks, by looking into the nature of the disease, and by examining the anatomy of the animal. The acarus scabiei belongs to a class of insects which breathe by the tracheæ, and its respiration is therefore suspended by smearing its body with any oleaginous substance. It is in this manner then the sulphur ointment acts, according to the author, and not in virtue of any specific action of the sulphur. In proof of this he affirms that he has cured more than forty cases by inunction with simple lard, unaided by any other treatment. The average duration of treatment was only a week.

Medical Times, July 26, 1845.

ART. 32.—*Treatment of Scabies by the Veratria Alba.* The various ointments of sulphur used in scabies have these objections, that although they cure the disease, they are exceedingly offensive to the patient and his friends; and, moreover, in irritable subjects frequently give rise to eczematous eruptions, which are even more troublesome than the original disease. For these reasons the following recipe is recommended in a recent number of the 'Annales de Thérapeutique:'

"Powered root of white hellebore 60 grammes = ʒxv
Black soap . . . 25—30 grammes = ʒvii
Hot water sufficient to make an ointment.

"All parts of the body affected with the eruption are to be rubbed once a day with this compound, after a few frictions, the patient complains of heat in parts which have been exposed to the ointment, and the itching of the scabies has ceased. One or two common warm baths are now necessary. If fresh vesicles should show themselves they are to be similarly attended to."

Annales de Thérapeutique.

ART. 33.—*Lotions in Porrigo decalvans and other Diseases causing falling off of the hair.* Mr. Wilson advises that persons with short hair should immerse the head in cold water morning and night, and after

drying and well brushing it to moisten the roots with one of the following lotions. In females with long hair the cold washing may be dispensed with. The lotions are three in number:

No. 1. Vinegar of cantharides, half an ounce.
Eau de Cologne, one ounce.
Rose water, one ounce. Mix.

2. Eau de Cologne, two ounces.
Tincture of cantharides, half an ounce.
Oil of nutmegs, half a drachm.
Oil of lavender, ten drops. Mix.

3. Mezereon bark, one ounce.
Horseradish root, one ounce.
Boiling distilled vinegar, half a pint.

The infusion to stand for a week and then to be strained. If the hair becomes dry and harsh after using these lotions, a small quantity of pomatum may be rubbed in.

Practical Treatise on Healthy Skin, &c. p. 345.

ART. 34.—*Case of Molluscum.* The following case is described under this head by Dr. NERET, of the Hôpital St. Charles of Nancy. Nicolas Lallemand, an infirm old man, 73 years of age, was admitted into the hospital on the 27th of February 1841, with œdema of the legs. About this time tubercles were observed to develop themselves over different parts of the body. They appeared in great numbers on the abdomen, back, thighs, and arms; in smaller numbers on the legs and forearms; a few on the neck, and one only on the face near the external angle of the left eye; none on the feet, hands, or hairy scalp.

Their appearance was preceded by a red spot; their form was circular or oval; they rose and extended in size gradually; their base was flattened; some acquired the volume of a pea only, some that of a filbert, and others that of half an egg divided longitudinally, which they resembled in shape. Their surface was convex; they had a reddish livid tint, were hard to the touch, and painful on pressure. On incision they bled and their tissue appeared homogeneous, cellular, and reddish. Their bases were surrounded with a red areola from one to two centimetres wide, according to their size.

When fully developed the largest ulcerated on the surface, suppurated, and then became covered with a black crust, which dried and fell off. The body of the tubercle itself dried, shrivelled, became black, diminished gradually in volume and ultimately disappeared, leaving a copper-coloured stain resembling venereal spots, which subsequently entirely disappeared. Suppuration of the smaller tubercles was scarcely obvious, they became covered with a black crust and gradually disappeared; some shrunk and disappeared without any trace of suppuration. Two months for the most part elapsed from their first appearance to the total disappearance of the copper-coloured spots which succeeded them.

The disease was at its height in April, and a month later the number of tubercles was greatly diminished. The patient was throughout in good health. Inoculation of the purulent matter in a healthy part of the thigh produced no effect.

In June the patient was attacked with erysipelas attended with diarrhœa and other unfavorable symptoms. The inguinal glands in the right groin swelled, but the tubercular disease disappeared. On the 15th of August a very few tubercles remained in the thighs and back. The patient then became the subject of hemorrhagic attacks. Spots running together were remarked on the legs, resembling purpura hæmorrhagica, the epidermis was detached in large scales from the whole surface of the body, and the patient sunk on the 28th of August.

On post-mortem examination, one of the few remaining tubercles on the thigh was cut through, and its base found resting on the cellular tissue which covered the aponeurosis, and its parenchyma was in a state of decomposition. The upper part of the lungs, particularly on the right side, which was puckered, contained black concretions, resembling *melanotic matter*. There were three serous cysts, containing a white, limpid liquid, on the surface of the right kidney; both kidneys were hyperæmic, and the urine in the bladder was coagulable by heat and nitric acid.

The patient stated that he had never contracted any venereal complaint.

A thorough investigation of those cases which practitioners, for want of a better nosological position, are accustomed to refer to the genus molluscum, would repay the labour of one of our first pathologists. We beg to refer those who are interested in the subject to a paper in the 7th volume of the 'Medico-Chirurgical Transactions,' p. 227.

Archives Générales de Médecine. Août 1845.

SECT. VIII. THERAPEUTICS AND ACTION OF MEDICINES.

Art. 35.—*On the Therapeutical value of Nitrate of Potash.*

By M. Selade.

(*Archives de la Médecine Belge*, Mars 1845.)

[The following observations form part of a memoir, entitled 'General Considerations on the Mode of Action of Medicinal and Poisonous Substances,' and appear to exhibit the antiphlogistic virtue of the nitrate of potash in a favorable point of view. The author commences the subject by an historical résumé of the employment of this medicine, which is not of sufficient interest for repetition; he then enters upon his own experience of its power in various diseases. His observations are to this effect:]—"I have exhibited the nitrate of potash in inflammatory affection seventy-two times, and after a scrupu-

lous investigation of its mode of action, I have no hesitation in saying that it is one of the most powerful antiphlogistics which we possess. The majority of authors in speaking of this medicine have always confounded its direct action upon the living economy with those phenomena which are the result of this mode of action; and they have, moreover, failed to discriminate between its primary and secondary effects. I shall in the first place mention the more certain effects of the medicine, and then proceed to notice those which have been less clearly appreciated.

The first and most constant symptoms produced by the ingestion of the nitrate of potash in inflammatory diseases are a diminution of the strength and frequency of the pulse, together with a subsidence of the exalted temperature of the body. These effects, except in very severe cases, are perceptible in the space of twenty-four hours from the time at which the medicine is exhibited. The secondary effects are declared by an increased secretion from the kidneys and skin, of these the kidneys are the first to be influenced. The mode in which the nitrate of potash acts is, in my opinion, directly upon the blood, by diminishing the quantity of fibrin, at the same time that it increases the quantity of serum. Experience has proved that in the hyperæmiæ the fibrin is constantly increased in quantity, and that it at the same time acquires new properties; the blood becoming more stimulating, and eventually producing great disturbance in the various bodily functions. By the use of this medicine this state of things is rectified; the blood becomes less exciting, and less disposed to coagulate, and a curative change takes place, in virtue of which the function of the diseased organ becomes re-established.

The dose of the nitrate of potash must necessarily vary according to the age and other individual circumstances of the patient. In acute inflammations in the adult, I generally commence with half an ounce in repeated doses during the twenty-four hours, increasing it to six drachms on the next day, and subsequently to one ounce. In subacute inflammations a smaller quantity will be sufficient. The dangers which are attributed to the employment of this medicine have been much exaggerated; when exhibited in progressively increasing doses, I have never seen any ill effects."

[The author of this memoir appends several cases in which no other treatment than the exhibition of the nitrate of potash was pursued. Among these are two of acute pneumonia, one of acute rheumatism, one of menorrhagia, and one of blenorrhagia. In each of these the medicine was completely successful in the doses above mentioned. Precisely similar views of the action of nitre are taken by Zimmerman in his work on pseudo-plastic processes.*]

ART. 36.—*On the Therapeutical Action of the Aconitum Napellus.* By A. FLEMING, M.D., President of Royal Medical Society of Edinburgh.

The physiological and therapeutic action of the aconitum napellus or monkshood forms the subject of a most admirable inaugural thesis,

* Zur Analysis und Synthesis der pseudo-plastischen Prozesse, &c. Berlin, 1844.

written for the degree of M.D. in the University of Edinburgh.* Dr. Fleming's work is full of interest in every point of view, but as it will be noticed at length in our Report on Materia Medica, we shall confine ourselves in the present place to a condensed account of the therapeutical action of the medicine. It may be stated briefly, that its medicinal action, as stated by the author, is in the first place *anodyne*, secondly, it is *anti-neuralgic*, differing in this case from opium, in that it not only decreases the sensibility of the affected nerve for the time being, but removes the morbid condition of the nerves. It is also *calmative* in inordinate excitability, and *antispasmodic*. As an agent capable of depressing vascular action it possesses considerable power, and is said by the author to be superior to venesection, mercury, and purging in this respect, that it may be continued for weeks without producing any unpleasant effects. The *diuretic* properties of the drug are not decided, but it possesses undoubted powers as a *deobstruent*, causing the absorption of fluid effused into the joints in synovial rheumatism, and promoting, according to Störck and others, the discussion of glandular swellings.

The diseases in which aconite is said by Dr. Fleming to be useful are in various forms of neuralgia; in the general pains of fever; in diseases of the heart and great vessels, and in rheumatism.

I. *Neuralgia.* Aconite has been used in neuralgia by Pereira, Jahn, Hufeland, and others, with success, but has failed in the hands of Dr. Copland and Dr. Anthony Todd Thompson. Pereira, Copland, Watson, Skey, and others, are of the opinion that its external application is more likely to be attended with success in neuralgia, than its internal administration; while Hufeland, Busse, and Tealier prefer the latter: the author remarks, that in this respect our choice must be guided by the nature and cause of the affection as far as they can be ascertained. Should the disease be inflammatory, or be traceable to sympathetic irritation, the internal use of the remedy is the more likely to be beneficial; if, on the other hand, it seem to arise from some local irritation in the nerve, or is merely functional, its topical application may probably be sufficient. Its use should be preceded and accompanied by a due attention to the state of the secretions.

Hemicrania. In this form of neuralgia the author has found the external application of the tincture very effectual, both where the pain affects a circumscribed portion of the head, and where it extends along the course of a nerve.

Tic Douloureux. The aconite was first recommended in the affection by Dr. Turnbull; and it has since been used with benefit by Dr. Roots and Sigmond. M. Roche found the internal use of the extract very effectual. The author has tried the remedy in four cases. In one in which the super-maxillary nerve had been affected for seven months, a cure was accomplished in thirteen days. In a second case of great severity, nine days were sufficient. The third was a case of frontal neuralgia: the tincture was rubbed on the painful spot three

* An Inquiry into the physiological and medicinal properties of the Aconitum Napellus. London, 1845, p. 160.

times a day with decided benefit. In the fourth case only temporary relief was obtained.

In Toothache. The author advises that the gum should be rubbed with the tincture, or that it should be introduced on lint, if a cavity exist. It was tried in forty cases and gave immediate relief in all but seven.

Neuralgia of the thoracic and intercostal nerves. Spinal irritation. Dr. Fleming has found the local application of the tincture extremely successful, in the anomalous neuralgic pains occurring in females about the seventh, eighth, and ninth ribs of the left side, and also in spinal tenderness either coexisting with, or independent of these pains.

Neuralgia of the extremities. Under this head the author relates a case of aural neuralgia, one of neuralgia of the feet, one of a stump after amputation, and one of the right hand, which were cured by the internal use of the tincture. In twelve cases of sciatica treated in the same manner, seven complete and two temporary cures were obtained. As far as the author's experience goes, the aconite is most serviceable in those cases of sciatica which appear to depend upon a congested or inflammatory condition of the nerve.

In six cases of *gastralgia* Dr. Fleming used the following prescription with immediate relief:—

℞	Tinct. aconiti	℥ j
	Sodæ carb.	℥ jss
	Magnes. sulphat.	℥ jss
	Aquæ	℥ vj. M. ft.

A tablespoonful to be taken when the pain is urgent.

In *Cephalalgia* the aconite has been tried by the author fifteen times, and in ten cases with complete success. Of these three were cases of nervous, four of plethoric, and three of rheumatic headache. Relief was usually experienced after the first dose, and a complete cure effected on the second or third day. [Similar benefit has been derived by Dr. Burgess (Edin. Med. and Surg. Journal, 1840, p. 95) and by Mr. Radley (Lancet 1836, vol. ii, p. 925.)]

II. *Diseases of the heart and aneurism of the large vessels.* In all cases in which the indication is to diminish the heart's action, aconite is stated by the author to be a most valuable remedy. In *functional* derangement, it will be often found sufficient to obtain a complete cure, if conjoined to an appropriate regimen; so also in an hypertrophy, and those forms of organic disease in which it is advisable to reduce the action of the heart. In such cases the effects of aconite are superior to those of digitalis, for the reason that the former is from the first a direct sedative, while the latter is alleged to be preceded by a stimulant action.

In *Aneurisms*, accompanied with neuralgic pains, aconite produces a marked alleviation of the patient's suffering, partly in virtue of its power as an anodyne, partly in consequence of its sedative effect upon the circulation. [Dr. Furnival in his work on Diseases of the Heart, likewise speaks in favorable terms of aconite. Vide 'Half-yearly Abstract,' vol. I, p. 205.]

III. *Acute rheumatism.* Aconite was first recommended in this disease by Störk, and has since been employed with much success by Gesner, Gmelin, Murray, and more recently by Drs. Lombard and Sigmond. The author has annexed a table, in which he surveys the results of cases treated by himself and others. It appears from this table that the aconite treatment possesses great advantages over the ordinary methods, as it has for the average duration of its employment no more than five or six days, the duration by ordinary means being from a fortnight to three weeks. In three instances a cure was effected in two days, in one in three, and in six in four days. On the contrary, the lowest average of the duration of the treatment of acute rheumatism, as furnished by Drs. Hope and Corrigan, are a week according to the first-named writer, and nine days according to the latter. The aconite acts very speedily, subduing the rheumatic pains sometimes by a single dose; while there are few cases in which decided relief is not obtained in a few hours. The table shows likewise that heart complication occurred only in two cases out of twenty-two, [this is certainly below the average if we are to believe Dr. Latham, vide Art. 24,] and in these the cardiac disease had been detected previous to the exhibition of the aconite. "Thus," observes the author, "aconite not only effects a cure in a shorter period than any other mode of treatment, but appears to possess the great negative advantage of not increasing the liability to extension of the disease to the membranes of the heart."

Aconite seems equally useful in rheumatic fever, and in acute synovial rheumatism. In the latter disease Dr. Lombard has found it contribute powerfully to the removal of the fluid effused into the joints. Friction with the tincture assists this latter object to a material extent. Dr. Lombard considers aconite to be a specific in acute rheumatism; the author, however, believes its good effects to depend upon its power as a sedative of the nervous and vascular systems; in other words, to its properties as an anodyne and antiphlogistic.

Chronic rheumatism. The aconite may be used both externally and internally in this affection. The author, however, prefers its internal administration in the more active form of the complaint, or that which is, more properly speaking, a mild form of the acute disease. In the passive chronic rheumatism, he recommends its external application in the form of tincture. In lumbago its powers are stated to be of the highest order; decided relief frequently being obtained in the space of an hour.

The author has likewise exhibited the aconite with great advantage in erysipelas, in carcinoma as an anodyne, in pruritus, and in gout.

Mode of exhibition. The best method of employing aconite is in the form of tincture made as follows:—"Take of the root of the A. napellus, well dried and pounded, sixteen ounces troy; rectified spirit sixteen fluid ounces; macerate four days, strain, and add spirit till twenty-four ounces are obtained.

This tincture is beautifully transparent and of a slightly bitter taste.

Dose as an *anodyne, antineuralgic* and *calmative*, ♏ v, three times a day, increased daily by ♏ j per dose. As an *antiphlogistic* ♏ v, repeated four hours after the first dose. In order to sustain the

sedative effects thus produced, ♏ iiss are to be given every three or four hours. [The author, it must be stated, cautions the practitioner that in exhibiting the drug after this plan, the patient ought to be seen and his pulse examined before each dose; if this cannot be done, he advises that it should be given as in the anodyne method above mentioned.]

The best method of administering the drug in diseases of the heart is to give it in smaller doses than those frequently recommended, but more frequently repeated. Sickness may be avoided by an effervescing draught taken after each dose.

For external use the author prefers the tincture rubbed over the affected part, but also employs an ointment, as follows:—

℞ Aconitinæ, grs. xvj.
Sp. rectif. m. xvj. Tere optime.
Dein. adde axungiæ, m. j. ut ft. unguent.

The author in the last place cautions us not to employ either preparation when there is any absorption of the skin. (pp. 54-83.)

ART. 37.—*On the Remedial Efficacy of Ox-gall.* By R. H. ALLNATT, M.D. A.M. F.S.A.

(*Lancet*, June 7, 1845.)

Habitual costiveness (observes Dr. A.) frequently arises from a deficiency of bile, which appears to act as the natural stimulus to the peristaltic action of the bowels. The motions in such cases are clay-coloured. The more fluid parts become absorbed, and hardened masses become impacted in the lower bowel, thus adding a mechanical obstacle to the already existing cause of constipation. He remarks, that if this mass of inspissated fæcal matter be subjected to the action of ox-gall, even out of the body, it becomes broken down into a fluid pulp, and, however pale in colour they may have been previous to the admixture, they speedily assume a natural appearance. The same effect follows the injection of ox-gall into the bowels, as is shown in the following case:

A. R., a young lady, æt. 20, suffered from obstinate constipation, which had persisted upwards of a fortnight. She had been treated previously to visiting me, by drastic purgatives, which produced pain and vomiting, and a feeling of general uneasiness, combined with ineffectual attempts to pass an evacuation. The lower bowels were obviously obstructed by impacted scybala. Injections of turpentine were first administered without relief, when recourse was had to two ounces of ox-gall in a half a pint of thin gruel used in the same manner. The exterior parts of the hardened masses became immediately dissolved, and in the course of ten or fifteen minutes the whole was ejected, to the instantaneous relief of the pre-existing symptoms.

Another case, treated by the internal use of the gall, was followed by equally happy results:

W. P., a gentleman of active habits, was, after a course of mercury and opium, obstinately costive. A feeling of sickness was perpetually

present, vomiting occurred on rising in the morning, and a total loss of appetite ensued. He had taken strong and irritating doses of croton oil and colocynth, attended with aggravation of the symptoms. This was the state of things when he applied to me. He was ordered five grains of the inspissated ox-gall three times a day.

On the second morning a copious motion was produced. [A third and equally satisfactory case is next adduced, after which the author alludes in the following manner to the physiology of the bile]:

Independently, however, of these obvious and perhaps mechanical effects, the natural bile is a secretion which is designed to fulfil other important duties in the economy, for it has been proved by Berzelius Schwann, and others, that it is not merely as was supposed, an excrementitious fluid, intended for no other purpose than that of removing effete matters from the blood. In one of the experiments of the last-mentioned physiologist, he tied the ductus communis choledochus of a living animal, and established a fistulous opening by means of which the bile escaped externally. His conclusions are as follows: 1. That when bile does not get into the bowels, its absence is generally perceptible about the third day, by a marked diminution of weight. And 2. That unless the channel for the conveyance of bile to the duodenum be re-established, symptoms of deficient nutrition, wasting, debility, &c., ensue, and death is the ultimate result.*

I regard this last as a highly important pathological fact, for how frequently do we meet with analogous instances in practice; cases of marasmus, in which, without any appreciable organic lesion, there is a gradual decline of the physical and vital energies, direct evidences in fact of deficient nutrition, involving the integrity of all the functions of the body, and leading to a fatal termination? There is, however, a symptom almost invariably present, and one by which our practice is in a measure guided, namely, inaction of the liver, which gives rise to obstinate constipation, clay-coloured stools, and the whole train of effects which follow an obstruction of the hepatic secretion. A case of this kind fell under my observation a few years ago, which made a strong impression upon my mind, owing to the total inefficiency of all the means adopted. After a severe attack of influenza, the patient sunk into a cachectic state, the liver was uniformly torpid, and nutrition in consequence appeared totally suspended.

Chlorosis is another disorder in which there is invariably a confined state of the bowels, arising from a paucity of bile; and a series of morbid changes takes place, indicative of deficient nutrition. In these cases, if we could supply the pabulum which nature has denied, and which has been proved to be of such essential service in the economy of her operations, we should be fulfilling the most direct indication and the most rational mode of treatment. At any rate, in the absence of efficient means afforded by our present store of materials, I regard the ox-gall as a valuable resource, worthy of a patient and extended trial.

In all cases of incipient constipation, administered in the form of

* Vide Half-yearly Abstract, Vol. I, pp. 255 and 346.—Ed.

enema or pills, the ox-gall is a remedy of undoubted efficacy; and even in protracted cases, where hope has almost departed, but where the evidence of strangulation is not unequivocal, it should never be omitted by the practitioner. In habitual constipation, accompanied by indigestion, clay-coloured stools, and a feeling of oppression after meals, it acts almost with specific certainty. When, however, the liver begins to assume its healthy action, its employment should be discontinued, as it will then produce all the symptoms of regurgitation of bile into the stomach. This state will be readily recognized by the practitioner as a favorable omen of returning power.

There is one other point of considerable importance connected with the present subject, which is, the destruction of the narcotizing property of opium, when combined with ox-gall; the constipating effect of opium is principally produced by its action upon the liver, the secretion of which it arrests, and renders insufficient for the due stimulation of the alimentary canal. In many cases this is a serious drawback to the exhibition of opium, for we often require its sedative, when its constipating effects would be injurious. Five or eight grains of ox-gall will neutralize this effect of one grain of opium without destroying its sedative power."

[As many of our readers may be unacquainted with the method of preparing the inspissated ox-gall, we here append some directions as given by Dr. Hunter Lane, and of the efficacy of which we can speak practically, having given it extensively when first recommended by Dr. Clay, and we may add with an equal reliance upon its powers. Dr. Lane states:—"That great care is to be taken in selecting the gall-bladders, which should be from young oxen. When healthy, ox-gall is a transparent fluid of a bright grass-green colour, of a viscid and equal consistence, strong animal odour, and bitter alkaline taste. Bile of this description taken from about a dozen bladders should be poured into a deep earthenware vessel, and allowed to rest for twenty-four hours; the supernatant liquid should then be poured off into a shallow dish, and set on an oven at a temperature not exceeding 100,- until it be reduced to the consistence of an extract." Dr. Lane suggests, that as its deliquescent nature prevents its being kept in a convenient consistence even when made into pills, that it should be *desiccated* and preserved for use in the form of powder in well-stoppered bottles. (Lancet, July 5, 1845.)

The deliquescence complained of is denied by Dr. Allnatt, (Med. Gazette, July 11,) and, as we think, with reason; we can at all events vouch for the perfect condition at the present time of a specimen of the inspissated gall made two years ago.]

ART. 38.—*On the endermic use of Morphia in painful permanent Swelling of the Joints, with Contraction.* By A. TODD THOMPSON, M.D. F.L.S.

(*London and Edinburgh Monthly Journal*, Oct. 1845.)

[Dr. Thompson introduces the subject of his present communication by the statement that the disease which he wishes to illustrate is

different from that which was first described by Dr. Haygarth, under the designation of "nodosity of the joints." The following is his description of the disease to which he alludes]:

"The disease, which is the subject of this communication, does not display itself at any particular period of life, nor is it confined to either sex. I have never seen it, however, under puberty. It appearing in every instance to be the sequel of repeated attacks of acute rheumatism; and has a greater affinity to inflammation of the synovia membranes so graphically described by Sir B. Brodie, than to any other disease with which I am acquainted. It sometimes appears in many joints at the same time, but is most commonly confined to the knee-joints. As it usually follows soon after the last of the attacks of rheumatism which have preceded it, the pain of the joints is referred to a recurrence of the rheumatic inaflmmation, although it is commonly confined to the inner side of the knee, and is only severe when the joint is moved. In a few days afterwards, however, the joint begins to swell, and the enlargement is accompanied with contraction of the flexor muscles, so that the limb assumes a semiflexed position, and cannot be stretched out without considerable pain. There seldom appears to be much effusion of lymph, and the evidence of the presence of fluid in the joint diminishes as the swelling progresses, and ultimately it seems as if the enlargement depended altogether upon the deposition of solid matter. At this period the joint loses its mobility and every attempt to extend the limb is productive of intense suffering to the patient. The affection is attended with little fever or constitutional derangement, excepting when the inflammation assumes the acute character. I am inclined to think that the inflammation is usually of a chronic character, and only occasionally becomes acute from extraneous causes. I am fully aware of the difficulty of distinguishing between acute and chronic inflammation, but in the diseases under consideration I have been guided by the degree of pain in the affected part, and in the febrile action which accompanies its increase, in determining the existence of acute inflammation. Under such circumstances, also, when blood has been abstracted, it has always displayed the buffy coat. As the pain is greatest in the night, the patient is often worn out for want of sleep."

[The exact pathological condition of the joints in the disease above described does not appear to be satisfactorily made out, nor does Dr. Thompson speak from actual inspection of a diseased joint, when he states that he "has no doubt that the inflammation is seated in the synovial membrane, which becomes thickened, and thus enlarges the joint and renders it rigid."]

"The remedial means which have been usually employed in inflammation of the synovial membranes of joints, viz. colchicum, opium, calomel, and antimonial preparations, remedies that have a powerful salutary influence in acute rheumatism, and in gout, have failed in my hands in affording either much relief from pain or in aiding topical means, such as repeated cupping, blistering, and moxas, to restore the action of the joint in this disease. Under such treatment, the pain has been abated for an interval, but it has generally returned when an effort has been made to bear upon and use the limb, or when

the general health has been in the smallest degree impaired. Preserving the limb in complete repose, seemed only to favour the contraction, to render the immobility of the joint permanent, and to impair the general health. Douching, shampooing and friction, with fomentations, have been productive of no benefit.

Reflecting upon the many disappointments that had followed my treatment of these cases, I was induced to think that much of the chronic inflammation was kept up by the pain, and that if that could be reduced, and at the same time counter-irritation be maintained, more permanent relief might be obtained than had hitherto been the case. For this purpose I resolved to try the topical effect of *morphine*, the beneficial effects of which I had had several opportunities of witnessing in cases of tic douloureux. I blistered the affected joints, and sprinkled the denuded surface with a grain or a grain and a half of the hydrochlorate of morphia night and morning. The application caused a sensation of burning on the part, which, however, soon subsided, and left the joint in a state of comparative ease; and after a few days, it was susceptible of a small degree of motion without pain; so that in some cases the patient was capable of extending the limb freely after the tenth or twelfth application. In many instances a particular eruption attends the application of the salts of morphia, occasionally commencing at a distance from the affected part, and gradually extending over the greater part of the body. In such instances the disease has yielded more rapidly than when no eruption appeared. General remedies were sometimes employed conjointly with the topical means, but these were necessary only when the general health required correction."

[The author adduces seven cases in which the medication he recommends appears to have been eminently successful, and concludes his paper with these general deductions]:

"1. That in painful, swollen, and contracted joints, depending upon rheumatism or other causes, the topical application of hydrochlorate or acetate of morphine, to a blistered surface, on the affected joint, is capable of reducing the swelling, abating the pain, and restoring the motion of the joints.

2. That these salts seem to produce their beneficial effects by reducing the sensibility of the nerves of the joint, and favouring absorption by their counter-irritant influence.

3. That they do not act as general narcotics, until the joints are relieved.

4. That they frequently excite a pustular eruption over the body; but this disappears spontaneously, soon after the use of the topical application is discontinued."

ART. 39.—*Endermic use of Tobacco.* By WM. BECK DIVER, M.D., of Cincinnati.—The use of tobacco as a remedial agent has received less attention from the profession than it deserves. Its powerful agency has been satisfactorily tested in cases of strangulated hernia, ileus, and spasmodic stricture of the urethra; but the dangerous consequences which have been reported as resulting from its use in the

usual form by the mouth and by the rectum, induced me some years ago to try it endermically; and the results, which were entirely satisfactory, were published in the Lancet, vol. ii, page 420.

Subsequent trials of this powerful antispasmodic lead me to repose still greater confidence in it, and induce me strongly to recommend it in cases where the ordinary remedies of this class fail or are inadmissible.

The following case will illustrate the advantages of this method in tetanic rigidity of the muscles.

W. H., of St. Charles, Mo., received, about seven years ago, a wound from an adze, which completely divided the rectus femoris muscle immediately above the patella. In order to procure healing by "the first intention," his physician, very properly, placed the limb in the extended position; his object was attained, but subsequent inflammation and deposition in the knee-joint produced anchylosis, and the most unyielding rigidity of the limb. Up to the time, June 1844, when the patient was submitted to my care, he had travelled about with great difficulty, and derived no advantage from medical treatment. He was extremely anxious to regain, if possible, the use of his knee-joint, and therefore cheerfully submitted to an operation for this purpose. In the presence of several physicians of this city, I divided the rectus femoris transversely in nearly the direction of the original wound; this was effected with a very small knife by a subcutaneous incision; scarcely a drop of blood was effused; the ends of the divided muscle widely retracted, and a very slight degree of flexion could be produced by the application of force. The next day, 13th June, I placed the limb in Roe's apparatus for compound fracture of the leg, and applied the screw, by which a still greater degree of flexion was produced. For several weeks flexion and extension were kept up, until a good degree of motion was established in the knee-joint. Beyond a certain point, however, the antagonist muscles refused to yield, and upon applying a greater degree of force with the screw, a severe tetanic rigidity was set up in the extensors which threatened to frustrate our object. To relieve this I directed the patient, who was unaccustomed to the use of tobacco, to smoke freely the strongest that could be procured. While under the influence of this form of the remedy, the muscles became relaxed, and a still further flexion of the knee was effected. The following ointment was rubbed into the groins and over the knee:

R. Iodin. gr. xij.
Potassæ hydriod. ℈ iv.
Olei nicotianæ, gtt. L.
Adipis præparat. ʒ ij. Misce.

Under a persevering use of this formula, and continued application of the screw producing flexion and extension, I succeeded in reducing the tetanic rigidity of the muscles and tendons; the motion of the joint was in a good degree restored, and the patient enabled to ride on horseback with perfect satisfaction. His health being slightly impaired by the confinement necessary, he was advised to visit Kentucky, where he rode and walked with more ease and pleasure than he had enjoyed for many years before.

I have succeeded in relieving a violent cerebral and gastric irritation by the powerful antiphlogistic properties of this agent; and the results of my experience in the endermic use of tobacco are such as to lead me to prefer it in cases where antiphlogistic means are requisite, but where the vital powers are too much depressed to admit of venesection, or the internal use of antimonials. The application of tobacco cataplasm to the epigastrium has, in my practice, removed violent colic resulting from spasmodic stricture of a portion of the intestinal tube, and copious evacuations have been produced by the same method where the ordinary purgatives were inadmissible, or when delay was dangerous. A great advantage in this method is that the remedy is more immediately under the control of the practitioner than when administered internally.

Philadelph. Med. Exam., Sept. 1845.

Art. 40.—*Efficacy of the Conium maculatum in the Treatment of Tapeworm.*—[We have already alluded to the employment of the pomegranate bark and the *kosso* as remedies for this parasite; the following account, by Dr. Maulucci, exhibits the curative powers of the hemlock in a favorable light.] A herdsman, æt. 28 years, was the subject of frequent convulsions, accompanied by great pain in the region of the umbilicus. When seen by Dr. M. the face was pale, the eyes hollow, there was complete prostration of strength, with itching of the eyelids and nose, cramps, vomitings, and flatulence. Upon the suspicion of the presence of intestinal worms, various anthelmintics were given, but without effect. An infusion of valerian appearing to relieve the symptoms, the patient's daughter was in the habit of gathering the leaves of the plant. On one occasion she gathered, by mistake, a considerable quantity of the conium maculatum, of which an infusion was made, and taken by the patient. In a short time he experienced the most violent convulsions, with vomiting and purging, and other symptoms of poisoning by hemlock. He was rallied by the use of strong coffee and vinegar, and speedily evacuated an immense tænia, after which his recovery was rapid and complete. Dr. Maulucci had occasion to give the conium to an infant infested with the same worm, and succeeded in expelling it, after failing with other medicines. The dose was three grains of the powdered leaves associated with powdered valerian.

Annal. Univer. de Méd. and *Revue Médicale*, Mai 1845.

Art. 41.—*On the Employment of the Fumes of Belladonna in Hæmoptysis*:—M. Schroëder speaks highly of this herb in hæmoptysis, used in the following manner:—The dried leaves are cut into small pieces, and about two drachms are then thrown upon burning coals, so that the patient may be enabled to inspire the fumes as they arise. In all the cases of hæmoptysis in which this simple expedient was tried, the author found it effectual in arresting the hemorrhage, generally at the same time allaying the cough, and producing a feeling of relief in the chest. It is singular that inhalation of the steam from a decoction of these leaves, or their internal administration, does not appear to have an equally beneficial effect.

Annali Universi di Medecin, Avril 1845.

SECT. IX. VARIA.

ART. 41.—*On the Causes of Sudden Death.*

(*Medical Gazette*, Aug. 1, 1845.)

[The most frequent causes of sudden death, occurring in persons in previously good health, independently of external violence, are distributed by the author of a paper with the above title, under the following divisions. Sudden death arising from causes originating:]

1. *In the head.* *a.* Rupture of the basilar artery. This is probably the only spontaneous lesion occurring within the skull which *invariably* causes instant death.

b. Rupture of a large artery in the vicinity of the respiratory tract. In two cases reported by Dr. Francis (Guy's Hospital Reports, April 1845,) death occurred within five minutes in one, within ten minutes in the other.

c. Apoplexy of the pons varolii. Death usually instantaneous, but patients sometimes survive more than an hour. When the effusion is situated in the lateral nervous strands, life may be more prolonged.

d. Sudden effusion into the lateral ventricles. Death may occur instantly, or within a few minutes of the seizure. But in many cases the patient lives from one to twelve hours, remaining comatose, with spasm, rigidity, paralysis, or other symptoms of central lesion of the brain, affecting, more or less, both sides of the body.

e. General nervous congestion of the brain and its membranes, especially in coincidence with cardiac and pulmonic obstruction. Dr. Francis relates two cases of sudden death in epileptic patients, in whom none of the marked appearances were such as would have been supposed capable of destroying life. In persons suffering from chronic cerebral disorder, sudden death is liable to occur; the recent morbid appearances being those of venous congestions, serous effusion, or extravasation of blood or serum around the tumour, or other chronic degeneration of the brain.

2. *In diseases of the heart.* Rupture of the right cavities, or pulmonary artery. These accidents are immediately fatal in most instances, but not invariably.

b. Inefficiency, by rupture or ulceration, of the pulmonary valves; sudden influx of blood into the right ventricle, or the occurrence of additional pulmonary obstruction. This is especially likely to occur, in consequence either of extensive pulmonary disease, thoracic deformity, partial contraction, or the presence of any other serious impediment to the circulation on the left side of the heart.

c. Rupture of the left auricle. Death instantaneous; the case is one of rare occurrence. Dr. Francis relates a single example.

d. Rupture of the left ventricle. This is generally connected with fatty degeneration of the muscular walls. Death usually, but not always, instantaneous.

e. Rupture of the coronary arteries. Death immediate. The coronary veins undergo great distension without rupture, but their obstruction sometimes determines fatal effusion into the pericardium.

f. Persons who have the left ventricle weakened and dilated, especially where the aortic valves are ineffective, are liable to die suddenly, or a few hours after seizure. These results are induced either by sudden obstruction to the systemic circulation, or by some depressing influence.

g. Sudden rupture of the cords of the mitral valve. Death sometimes within an hour, when the heart is diseased; not suddenly fatal when that organ is healthy.

h. Rupture of the vena azygos. Sudden death from this cause occurred in cases reported by Morgagni and Flügel.

i. Rupture of the aorta or of an aneurism within the pericardium. Instantaneously fatal in most cases; in some instances life is prolonged for hours, or days.

3. *In the respiratory apparatus.* *a.* Œdema of the glottis. Dr. Francis gives a case of this affection, in which death took place within five minutes.

b. Profuse hæmoptysis. Death may occur either by suffocation or collapse.

c. Bursting of an aneurism into the trachea, bronchus, or substance of the lungs, is generally fatal at the first gush.

d. Rupture of an aneurism into the pleura. Death sudden.

4. *In the abdomen.* *a.* Rupture of the splenic or coronaria ventriculi artery into the stomach. Death may be sudden from hæmatemesis, but the time of death varies with the size of the aperture and the amount of the bleeding.

b. Rupture of an aneurism of the abdominal aorta. Generally fatal within five minutes, if the extravasation takes place within the peritoneal sac; but when the rupture occurs behind the sac, life may be prolonged from three or four hours to a week.

c. Rupture of the Fallopian tube, or tubal pregnancy. Usually proves rapidly fatal by hemorrhage.

d. Extravasation of fæces, bile, urine, or other irritating matters into the peritoneum, may produce death in from three to seven hours, by collapse, or by inflammation in from eight hours to three days; these cases, however, are not invariably fatal.

[Of 40 cases of sudden death collected by Dr. Francis, and published in the Guy's Hospital Reports for April 1845, the cause was:]

Rupture of arteries at the base of the brain, 2; venous congestion, 1; chronic disease of the brain, 1; epilepsy, 2; external obstruction at the origin of the great arteries, 3; effect of cold in chronic pulmonary disease, 1; œdema of the glottis, 1; hæmoptysis, 2; rupture of the left auricle, 1; aneurism of the aorta, with debilitated left ventricle, 1; rupture of the aorta at its origin, 1; rupture of a thoracic aneurism, 1; doubtful, 1.

ART. 43.—*On the Pathological Effects of Alcohol.* By Dr. PETERS.

(*New York Journal of Medicine*, vol. iii, No. 9.)

[Dr. Peters has given us the following account of the necroscopic appearances which he has observed in the bodies of nearly seventy persons who have died from the excessive use of ardent spirits.]

"*Head.* There was always more or less congestion of the scalp and of the membranes of the brain, with considerable serous effusion under the arachnoid, while the substance of the brain was unusually white and firm as if it had laid in alcohol for an hour or two; the ventricles were in most cases nearly or quite empty.* This peculiar firmness of the cerebral substance was noticed several times, even when decomposition of the bodies had made considerable progress. Typhus fever is the only disease in which we have observed a like firmness.

Lungs. Congestion, amounting sometimes to complete splenization of the pulmonary parenchyma, was a common appearance. The bronchi were very generally found reddened, and more or less filled with catarrhal secretions.

We must make particular mention of the infrequency of phthisis in drunkards; never have we met a tubercular abscess in them, even of the smallest size, while a small number of chalky tubercles was frequently noticed; and cicatrices also were often met with, and were marked by presence of puckering of the surface of the lungs, of solid bodies which were readily felt before the lung was cut into, and when this was done, they were found to consist of callous fibrous tissue, around which we rarely discovered a few discrete, gray, crude, small tubercular granulations; in every instance these appearances were strictly confined to the upper third of the superior tubes, and the rest of the lungs was entirely free from either old or recent tubercular disease.

Heart. This organ was generally flabby, enlarged, and dilated, but little or not at all thickened; its outer surface was, in most cases, loaded with fat. The blood was often of an unusually fluid consistence. In some cases, where sudden death had been occasioned by the excessive use of ardent spirits, no other appearances were found in the body, except the fluid condition of the blood, congestion of the lungs and membranes of the brain, with serous effusion under the arachnoid.

Stomach. As a matter of course, this viscus very generally exhibited some morbid appearances. Sometimes the mucous membrane appeared perfectly white, and somewhat thickened, with distinct, flat, mammelated elevations of small size. When a quantity of undiluted spirits had been taken shortly before death, the stomach was often found wrinkled or corrugated, as if from the action of a powerful astringent on its upper surface; the mucous membrane exhibiting here and there patches of punctated, star-like or diffused, hemorrhagic inflammation. "In ten or twelve of the worst cases, in which from three pints to two quarts of liquor had been swallowed within thirty-six or forty-eight hours before death, we found extensive hemorrhagic inflammation of the larger portion of the stomach, with effusion of blood in large patches under the mucous membrane. In several instances in which unknown persons were found in the river, with

* In a case, related in a recent number of the *Illinois Med. and Surg. Journal*, the serum in the cerebral ventricles yielded strongly an alcoholic odour; this was so apparent, that it was readily recognized by every member of the jury.

severe cuts or bruises upon their heads or bodies, we have been enabled to testify positively, from the above appearances of the stomach, and those of the liver and omentum, presently to be described, that they had been deep in liquor just before they had fallen into the water, and that in all probability no murder had been committed, as the cuts or bruises would lead one to suspect.

The *liver*, in moderate drinkers, was generally found to be somewhat larger than usual, its texture softened, and its outer surface spotted, with patches of fatty infiltration extending two or three lines into the parenchymatous substance, the rest of the viscus retaining its natural colour, and its edges their normal sharpness. In those, who had been more addicted to the abuse of spirits, the liver was still larger, its edges were more obtuse, and the patches of fat on its surface were larger and more numerous. In old drunkards the liver was very large, weighing at least six to eight pounds, often ten to twelve; the edges were very thick and much rounded; the parenchyma almost white with fat, soft, fragile, and the peritoneal covering could be torn off in very large pieces with ease. Granular liver was found in four or five cases only.

The *gall-bladder* was always large and filled with bile.

There is no uniform or characteristic change in the *spleen:* occasionally it is rather larger than natural; but, as a general rule, the small size of this viscus contrasted strongly with the very great enlargement of the liver.

The appearance of the *omentum* is very peculiar; it is loaded with an ashy gray fat; our attention was called to this in Vienna; it is there regarded as so characteristic, that a man is often judged to have been a drunkard, from a glance at the omentum, when the abdomen is first laid open.

The *mesentery* is said to be always loaded with a thick layer of fat.

The *small bowels* generally contained a large quantity of bile, and their mucous membrane was thickly covered with a very tenacious mucus. In eight or ten of the worst cases, numerous and extensive patches of hemorrhagic inflammation were found, with copious effusion of blood in and beneath the mucous membrane. This may account for the frequency of discharges of blood from the bowels of drunkards.

The whole body of drunkards, with the exception of the brain, generally passes over into decomposition with unusual rapidity."

[Dr. Peters closes his interesting paper with the following pathological conclusions on the *modus operandi* and general morbid effects of the immoderate use of spirituous liquors.]

"The most important appearances are the fluid and venous condition of the blood, and the great superabundance of fat. According to Heinheimer and Boesch, alcohol acts directly on the blood, and drunkenness is owing to an alcoholic venous plethora, in which the proportion of hydrogen and carbon in the blood is much increased. The same alteration of blood occurs in poisoning with narcotic drugs, and the delirium and excitement of the nervous system, produced by them and alcohol is supposed to be secondary to this change in the quality of the blood. According to Orfila, if a large quantity of alco-

hol be taken during, or shortly after a meal, it coagulates the albuminous portions of the contents of the stomach, and this coagulated albumen passes off almost unchanged into the small intestines. The action of the gastric juice upon other portions of the food is prevented, and they undergo acetous fermentation. A large quantity of pure alcohol also reaches the duodenum, mixes with the bile, which loses its alkalescence, and can no longer be precipitated into insoluble flocculi by the addition of the acid chyme, as is normally the case; in the natural state, this insoluble precipitate from the bile is not reabsorbed, and is cast out with the fæces; but in drunkards no such precipitate ensues, the bile remains fluid and unchanged by the chyme, and a larger portion of it is reabsorbed; hence the bilious difficulties in drunkards, and the frequent occurrence of jaundice in them. Large quantities of acid chyme, and imperfectly digested food pass along the small intestines, and even reach the cæcum and colon, where they also undergo acetous fermentation; this is sufficient to account for the dyspeptic difficulties and sour eructations in drunkards. The blood, which returns from the intestines into the vena porstæ system and liver, is more or less mixed with alcohol, imperfect bile, and other impure matters; hence the venous plethora of the vena portæ, and subsequent affections of the liver; as much bile is brought back to the liver, it is doubtless resecreted from it with great rapidity; hence, among other causes, the large quantity of bile which is usually found in the gall-bladder and small intestines.

"The chyle which is absorbed by the laeteals must be very imperfect, and is mixed with more or less alcohol; of course the blood, which is formed from it, is equally imperfect. If alcohol be added to the blood which has been drawn from a vein, the blood becomes dark, it loses its normal opacity, becomes transparent, and changes to a cherry-juice like fluid. With the aid of the microscope, we see the blood-globules gradually losing their red colouring matter which becomes equally dissolved and diffused through the serum, which assumes the peculiar cherry-red colour; this serum coagulates to the consistence of thick milk, but cannot form solid coagula, and no watery particles separate from it. These appearances agree with those of the blood in topers, which is thick but fluid; it coagulates very loosely, contains but little fibrine, but much albumen and fat.

"According to Rokitansky, Andral, and Engel, the blood in tubercular cachexia is arterial and rich in fibrine, while in the cancerous cachexia and typhus fever, it is more venous, it abounds in albumen, and is deficient in fibrin; hence, alcohol would seem to produce a state of the blood opposite to that which occurs in tubercular disease, and is somewhat similar to that which obtains in cancer; therefore, it may prevent the development of the former, and hasten that of the latter."

Art. 44.—*Teeth and Tooth-Powders.* By Dr. Heilder.

(*Œstr. Medicin. Wochenschrift*, and *Chemical Gazette*, June 15, 1844.)

Among the constituents of a good tooth-powder, the first in importance is *charcoal*, and especially *lime tree charcoal*. It forms a very

soft and cheap powder, and moreover possesses the valuable property of absorbing cohering substances, and destroying the disagreeable odour produced by carious teeth. Small quantities left in the spaces between the teeth have a disinfecting action on the particles of food which collect there. It does not, it is true, possess a pleasing colour, and is on that account rejected by many; moreover, particles sometimes accidentally get in between the teeth and gums, and shine through with a blueish colour.

Next to it in importance is *carbonate of magnesia*, both on account of its absorbent power and its extreme softness. Its property of neutralizing acids deserves particular attention, and, from its white colour, any pleasing tint may be imparted to it by some harmless colouring substance.

The *lapides cancrorum* and *creta alba præparata* resemble the carbonate of magnesia in their chemical behaviour, and in their action. *Ossa sepiæ conchæ præparata, corallia alba et rubra*, are, as carbonate of lime, insoluble, like the two preceding, in the secretions of the mouth; but they are less soft, and should therefore only be employed by grown up persons, and even then should be mixed with other powders.

Ashes are less to be recommended; they are sometimes even injurious, for in them the alkali is not neutralized by carbonic acid. Soap, in which the alkali is combined with fatty acid, deserves the preference, and, were it not for its disagreeable taste, would form an excellent ingredient in tooth-powders.

Orris root is a harmless substance, and is generally added to tooth-powders, on account of its agreeable odour. Many of the ingredients most frequently mixed with tooth-powders, such as alum, cream of tartar, tartaric and citric acids, borax, chloride of lime, &c., are absolutely injurious, and should always be rejected.

The most usual colouring substances employed are carmine, *Florentine lake, sanguis draconis, bolus arméniaca, corallia rubra, coccinella, lignum Santali rubrum;* but only the first two give a beautiful colour, in small quantities.

To please the organs of smell and taste, a few grains of *vanilla*, or a couple of drops of an essential oil, such as *bergamot, neroli, rose oil, oil of cloves*, or *oil of peppermint*, may be added.

With respect to the mode of application, it is recommended to clean the teeth with a *soft* brush and some powder, in the evening before going to rest; otherwise the particles of food have time during the night to undergo putrefaction, and, when removed in the morning, may have already produced considerable injury.

Professor Carebelli used to prescribe a gray tooth-powder, in the following form:

R. Pulv. oss. sepiæ;
Lapid. cancrorum ʒ iss. āā.
Corticis cinnamomi;
Iridis Florentinæ
Carb. lign. tiliæ 3 iij. āā.
Vanillæ gr. x. Misce.

For a less expensive powder, calcined oyster shells might be em

ployed instead of *os sepiæ*, and a few drops of bergamot oil instead of vanilla. He objected to red tooth-powders, from their rendering it impossible to tell when the gums bleed.

For children and young people carbonate of magnesia, without any other addition, is most to be recommended, because, on account of its softness, it is not liable to injure the still weak enamel, and, at the same time, it neutralizes the acid which frequently occurs in the secretions of the mouth in children.

ART. 45.—*Formula for extempore gaseous Chalybeate Water.*—Take of crystallized sulphate of iron two drachms, white sugar three drachms; pulverize, and divide into twelve powders. Take of bicarbonate of soda two drachms, sugar three drachms, and divide also in twelve powders. One of each is mixed in half a tumbler of water, and drunk while effervescing.

Medical Gazette, Sept. 12, 1845.

ART. 46.—*Mode of conducting a pathological Analysis of the Blood.* 1. A glass containing exactly 1000 grains of water is filled with blood directly from the vein; a glass stopper, fitting hermetically, is then inserted (care being taken to remove all bubbles), and the specific gravity of the blood ascertained. By continually shaking it, the blood is kept fluid; it is then poured into a porcelain vessel, and evaporated, care being taken to wash the glass out with distilled water, and add the latter to the other. The quantity of solid residue is reduced to the proportions in 1000 grains of blood. 2. A glass two and a half ounce measure is filled with the blood immediately after the preceding, covered, and set aside for eighteen hours. The clot is then carefully separated from the serum, and the weight of both ascertained. 3. The clot is now to be pressed through a linen cloth four inches square, and first the fibrine, then the fluid cruor collected. Each is thoroughly washed, freed from moisture, and weighed; they are then carefully dried, and again weighed. The results are to be reduced to the proportion in 1000 grains of blood. 4. The serum and clot are to be placed in a glass containing 360 grains of distilled water, and their specific gravity noted; then 250 grains of each, at the same temperature, are to be dried so long as they lose weight; the weight of the residuum is then to be reduced to the proportion in 1000 grains. There is a loss of weight by pressure through the linen, but as this will happen in the same proportion in all instances, the general results are correct.

Dr. Zimmermann observes that this method will be more suitable to the practical physician than Andral and Gavarett's, because of its greater simplicity and easier performance, while the results are quite as correct as by the latter method.

British and Foreign Medical Review, Oct. 1845.

PART II.—SURGERY.

SECT. I. SYMPTOMATOLOGY AND DIAGNOSIS OF SURGICAL DISEASES.

Art. 47.—*Periostitis in the Orbit.* By J. Hamilton, M.R.I.A., Richmond Hospital.

(*Condensed from the Dublin Journal,* July 1845, p. 385.)

Mr. Hamilton describes four cases of this disease, which he believes to be of somewhat rare occurrence. Two of these succeeded to unequivocal syphilitic symptoms. In one, the disease extended to the brain, and the patient died. The third case was a tumour in the roof of the orbit, displacing the eye, which Mr. Hamilton believes also to have arisen from inflammation of the periosteum. Where this inflammation occurs without any observable swelling, it is easily mistaken. In one case it was overlooked for several weeks, during which the patient suffered great pain along the eyebrow, forehead, and side of the head. The eye protruded, and vision was temporarily extinguished. On pressing upwards instead of forwards extreme tenderness was found in the orbital plate of the temporal bone. In all the cases the author has met with the disease occupied the inner two thirds of this plate, which may be explained by the part being covered with integuments only. In the case of tumour in the left orbit the vision became troubled, the patient seeing double, one object above another. This latter peculiarity, the result of the difference of the axis of vision in the two eyes, distinguishes this symptom from the double vision resulting from morbus cerebri, where the two images generally appear side by side.

The patient soon became conscious that the eye was pushed out of its place, there was a constant sensation of dust in the eye, and he had not quite as perfect a power of the motion of it, and of the eyelid, as previously. On admission his state was as follows. The eye was displaced downwards, forwards, and a little outwards; the infra-orbital fossa nearly filled up, particularly on the inner side; in which situation, immediately under the orbital ridge, a small smooth tumour could be felt, very hard, like bone, and evidently springing from the roof of the orbit; deeper than this there was a small soft swelling like a soft tubercle. No discoloration was observed in the integuments; there was a little tenderness over the swellings, and here, and in the supra-

orbital region, he formerly used to suffer pain. He was not subject to headache, but had violent earache of the left side; he thinks a year ago the eye was more displaced than now.

When in this disease the pain in the eyebrow is accompanied by swelling beneath it, and displacement of the eye, its recognition would appear to be easy. The important point of diagnosis is that pressure under the eyebrow in the orbital plate, gives great pain—"*the true shrinking pain of periostitis.*" From the cases related, it follows that we may meet with:

1st. Pain in the orbit, supra-orbital region, temple, and side of the head from periostitis, with little apparent swelling.

2d. With such amount of swelling as to displace the eye.

3d. With suppuration, caries of the bone, and perforation of the frontal sinus; or where the disease is situated deeper than the frontal sinus, the diseased action may extend through the orbital plate of the frontal bone into the cavity of the cranium, to the membranes of the brain, and cause death.

These varieties will be readily explained by attending to the different forms in which periostitis presents itself, either simple thickening of the periosteum, or deposit of serum, cartilage, bone, or pus between it and the bone. In cases of pain in the orbit, &c., pressure should always be made directly upwards on the roof of the orbit; acute persistent tenderness in that situation being one of the most decided marks of the disease.

Art. 48.—*On the distinctive Symptoms of Disease of the Hip-joint, and some Affections involving the Psoas-iliac muscle.*

By H. J. Johnson, Esq.

(*Lancet*, Aug. 30, 1845.)

1. *Disease of the bursa beneath the tendon of the psoas-iliac muscle, counterfeiting disease of the hip-joint.* Mr. F., a surgeon in the country, became alarmed in consequence of a gradually increasing lameness, and several eminent surgeons were of opinion that he laboured under disease of the hip-joint. There was much pain referred to the front of the hip and groin, always present, but sometimes much aggravated and increased by the motions of the limb, which it greatly interfered with; there was lameness, partly due to the pain and partly to stiffness about the joint; the limb was wasted, and Mr. F. supposed shortened, and the health had suffered. Mr. Johnson found just below Poupart's ligament, and evidently deeply seated, an obscure yet not undefined swelling, over the capsule of the joint. So far as could be made out it felt flattened, oval, and not free from tenderness. The head of the femur was forcibly thrust into the acetabulum by pressure and by shocks upon the foot, the thigh was flexed so that the knee almost touched the breast, the foot everted constituting both compression and friction,—none of these motions produced pain. When the limb was extended, or dragged violently down, so as to pull the bone from the socket by traction on the capsule, or the foot forcibly inverted, there was pain. Pain was also produced when the patient

himself everted the foot or flexed the limb, and in every instance it was referred to the front of the joint, the site of the tumefaction.

The tendons of the psoas magnus and iliacus internus coalesce before they reach the capsule of the hip-joint, so as to form one fibrous mass, by which the muscles are jointly inserted into the trochanter minor. This psoas-iliac tendon plays on the capsule, and is allowed to do so by the intervention of a bursa. Always distinct, this is sometimes of great size, and occasionally communicates through a perforation of the capsule with the synovial membrane of the hip-joint.

This bursa, inflamed, thickened, and enlarged, would account for the symptoms. It would escape compression when the surgeon forced the head of the femur into the socket, or flexed the thigh, or everted the foot; for by none of these actions was the superjacent tendon put upon the stretch. But the tendon was stretched and the bursa compressed when the surgeon extended the limb, or dragged on it, or turned the foot inwards; as also when the patient, throwing the psoas iliac muscle into action, flexed the limb or turned it outwards.

The result appeared to prove the correctness of the diagnosis. Under an appropriate plan of treatment the pain gradually became more bearable—it greatly diminished or altogether ceased. The lameness which remained was that of rigidity and thickening about the fibrous textures external to the joint, and in the latter period of his life the affection of the hip became a secondary consideration, the patient having since died of some visceral disease.

2. *Disease of the spine, counterfeiting disease of the hip.* Mr. S. complained of pain in the front of the hip, more severe at one time than another, and usually increased by exercise. He walked lame, with his body rather bent, and the limb, in appearance, shortened. His health had declined, and hectic symptoms were distinguishable. The disease had come on insidiously, had progressed gradually, and had been pronounced "disease of the hip-joint." Mr. Johnson proceeded to examine the limb accurately. On forcing the head of the femur into the socket, on flexing the thigh, and on everting the foot, no pain of any moment was produced. On extending the thigh, on pulling it downwards, and on inverting the foot, pain occurred. When the *patient* flexed the thigh or everted the foot, equally decided pain was produced. The pain was referred to the front of the joint, but in some of the movements, especially when the limb was widely extended or inverted, or dragged down, an obscure uneasiness about the spine was confessed to. Disease of the spine was inferred; for the direct pressure, and grinding as it were the articulating surfaces together, must have produced pain if the joint were diseased; while all those actions which necessarily dragged upon the psoas-iliac muscles, and through their medium on the vertebræ, as also the voluntary motions of the patient which threw those muscles into action, producing pain, was almost conclusive evidence of a disease of the spine.

Further investigation strengthened this evidence. The limb was kept permanently flexed, though not to any extent, for the purpose of relaxing the psoas-iliac muscle; in walking, the body was bent towards the affected side; the apparent shortening of the limb was

merely the result of inclination of the spine, and there was more uneasiness of the loins than the patient had previously admitted. Very little could be discovered on examination of the spine itself.

After the lapse of about five or six months an abscess formed in the loins close upon the lumbar vertebræ, and some portions of bone subsequently escaped; completely verifying the diagnosis. After three or four years' confinement to bed the patient recovered. This case illustrates the fact, that disease in the lumbar vertebræ is often characterized in its earlier stages by pain referred to the hip-joint, and lameness; as pain and lameness are referred to the knee in disease of the hip-joint.

ART. 49.—*Diagnosis of Fractures of the Neck of the Femur.* Instead of employing auscultation in the horizontal position, M. Lionet proposes that the patient should be supported by his sound limb on a stool, so as to abandon the affected limb to its own weight; and that the surgeon should place his ear over the neck of the bone while the limb is moved. A distinct crepitation will be heard. Vidal remarks that manifestly there are cases in which this proceeding could not be adopted, but it must be granted that for the purpose of diagnosis it is preferable to auscultation in the horizontal position.

Gazette des Hôpitaux, June 1845.

ART. 50.—*Diagnosis of Urinary Calculi.* An ingenious instrument as to the principle of its construction has been suggested by M. Secondi. In the first place, substances which may simulate the presence of stone in the bladder, whether fibrous or fungous, have never so much consistence but that by pressing on their surface with a metallic instrument, the latter can be depressed. If then, the bladder being full of urine, a hollow sound is introduced without lateral eyes, from the moment that its extremity is applied with some degree of force against the foreign body, that body being soft, the urine will cease to flow. If, on the contrary, there is really a calculus, its surface will never be so smooth and equal that the edges of the open extremity can be applied with sufficient exactitude to prevent all escape of the liquid, and the urine will continue to pass through the sound. To render the experiment more complete a syphon may be adapted to the external opening of the instrument; if, now, the course of the urine is suspended, a soft substance and not a calculus assuredly exists; always taking care to be certain that the end of the sound is not closed by the coats of the bladder. If, however, the urine continues to flow, it cannot be inferred with equal certainty that a calculus is in the bladder, since numerous circumstances, not easily avoided, might prevent the exact apposition of the instrument,—to a polypus for instance. The principle is good, and as such is susceptible of being perfected.

Congrès Scientifique De Milan. Encyclographie Méd. Avril 1845, p. 243.

Art. 51.—*Muscæ Volitantes.* By Wm. Mackenzie, m.d.

(*British and Foreign Medical Review: from the Edinburgh Medical and Surgical Journal*, July 1845.)

The appearances seen before the eyes, known under the name of muscæ, are of two principal kinds, such as have both apparent and real motion, and such as have apparent motion only—motion depending on that of the eye itself. These two kinds of muscæ are distinguished by the names of *floating* and *fixed*, and are quite different in their nature.

Floating muscæ. These are the most common kinds of muscæ. Overlooking the real motion which these muscæ present, some have viewed them as subjective sensations, depending on some intrinsic change of state of the optic nervous apparatus. That they are truly objective sensations, however, occasioned by the presence of particles in the interior of the eye indeed, but extrinsic of, and in front of the retina, admits of mathematical demonstration. But more than this: the particles appear to be of normal occurrence in the eye, for the appearance of floating muscæ may in general be seen by any person, by simply looking through a small aperture in a card at the clear sky, or through the eyeglass of a compound microscope at the flame of a candle two or three feet distant.

On contemplating the spectra thus brought into view, viz.—the beaded filaments, the distinctly and indistinctly defined globules, and the watery-like filaments, called by Dr. Mackenzie, respectively, the *pearly spectrum*, the *distinct insulo-globular spectrum*, the *indistinct insulo-globular spectrum*, and the *watery spectrum*, it is observed that they are situated in different planes, one behind the other, "that they never mingle with one another so as to change the order in which they stand before the eye, but the pearly spectrum always appears the nearest, then the sharply-defined insulo-globular, then the obscurely-defined globules, and farthest away the watery threads."

Seat of the particles the presence of which occasions floating muscæ. A spectrum, like opake spots surrounded by a halo, which occasionally seem to run together into dots, which again divide and disappear, and which ascend after every nictitation, which is sometimes seen and which appears to be produced by the layer of mucus and tears on the cornea,—called therefore, by Dr. Mackenzie, *muco-lachrymal muscæ*—has been confounded with floating muscæ, and the latter attributed to the same cause. That the particles which occasion floating muscæ, however, are situated in or behind the vitreous body, but in front of the retina, admits of being mathematically demonstrated, as also that they occupy different situations—those producing the pearly spectrum being the nearest to the retina, those producing the watery spectrum the farthest from the retina, the insulo-globular intermediate.

As to the nature of the particles: this admits of less satisfactory determination than their existence and seat.

The action on the light by the particles, whatever they may be, which cause muscæ, appears to be diffraction or inflexion.

Though floating muscæ thus depend on a cause extrinsic to the retina, their being ordinarily seen is owing to a morbid and excitable

state of the retina,—a state, however, which has no necessary tendency to run into amaurosis.

Fixed muscæ. These appearances, which are in their nature amaurotic symptoms, never change their position either in regard to each other or to the optic axis. They have thus no real motion, but merely apparent motion depending on the motions of the eyeball. It often, however, requires some attention and power of observation on the part of the patient to distinguish real from apparent motion.

Fixed muscæ vary in number, size, and form. At first semi-transparent, they afterwards become black, or at least dark. They appear like blotches when the patient looks at a sheet of white paper. Fixed muscæ are owing to spots of the retina becoming insensible. The insensible spots are apt to increase in size gradually, until the whole retina is overspread with insensibility,—is amaurotic. Examples of temporary fixed spectra depending on natural states of the eye, are the vascular spectrum in Purkinge's experiment, and the phenomena of accidental colours and ocular spectra.

ART. 52.—*Diagnosis of Fractures of the Base of the Cranium. Fluid discharged from the Ear.* By Dr. LAUGIER.

(*Archives Générales*, Août 1845.)

It is only within a few years that one of the most certain signs of fracture of the base of the cranium received attention. A fortunate circumstance gave Dr. Laugier an opportunity for the first time, in 1835, of noticing and studying the singular phenomenon of a running from the ear at first bloody, then becoming as colourless and limpid as water. Since then, ten or twelve cases have been noted by different observers. Autopsy confirmed the conjecture that the limpid fluid was the serosity of the blood which filtered through a chink in the os petrosum, passed into the cavity of the tympanum, and thence into the external auditory canal. In support of this opinion, Dr. Laugier gives the case of a mason, aged 23, who fell nearly thirty feet upon his head; he lost all power over his limbs, but they were sensible; after a short interval he recovered the use of his arms, and then of his legs, but answered no questions put to him; some drops of blood came from his nose and ears, but this had ceased by the time he arrived at the hospital. The next day a bloody tumour, three or four inches in diameter, was observed over the coronal suture; and the same evening, that is, thirty hours after the accident, a large quantity of transparent fluid, streaked a little with blood, was, for the first time, observed to flow from the ear; the pillow-case was wetted, and about an ounce was discharged in three hours, the left ear was dry. The fluid continued to flow for the two succeeding days, and then ceased, and the patient sunk.

The fluid contained no appreciable quantity of albumen. On dissection, a fissure was found without displacement, beginning at the coronal suture, going downwards and backwards, passing behind the sphenoid bone, reaching the petrous portion of the temporal bone about its middle, and terminating at its posterior margin. It penetrated the cavity of the tympanum, the lining membrane of which was

torn; between the dura-mater and bone there was a collection of blood, forming a clot about six lines thick, occupying all the temporal fossa, and bounded below by the petrous portion, with the colour and consistence of very fine currant jelly; the dura mater was not torn, and the brain was uninjured.

A second case was that of a child 4 years old thrown on the pavement by an omnibus. It was taken to the hospital in a state of profound coma, while motion, and sensibility to external impressions, remained; blood flowed from the left ear in such quantities that it filled the concha in a few seconds, the next day the concha was found filled with a watery fluid very slightly coloured, which was renewed as fast as it was sponged away—a certain sign to Dr. Laugier that the petrous bone was fractured. The fluid began to ooze on the preceding night. The third and fourth day it continued to flow, and only ceased after the trepan was applied on the fourth day. On the following evening the coma appeared less. The patient lived till the sixteenth day, being carried off by meningitis. On examination, a fissure was found, beginning at the top of the coronal suture, the left side of which it accurately followed for three inches, then suddenly branched off at a right angle, and traversed the left parietal bone to the extent of three and a half inches; below this was a stellated fracture, on the centre of which the trepan had been applied. One of the fissures extending from this fracture traversed the petrous bone, where it forms the roof of the external auditory canal, and parallel to its axis; the membrana tympani was completely destroyed. The dura mater was separated from the bone at the first-mentioned fracture to the extent of four and a half square inches, and under it was a fibrous clot, blackish within, but covered with a grayish film on its outer surface. It adhered strongly to the dura mater. The separation of this membrane from the bone extended to the lower fracture, but not to the base of the skull—the dura mater was not in the slightest degree torn.

Several other cases are quoted. In one the quantity of uncoagulable watery fluid which came away, exceeded a tumblerful. In one case the watery fluid came from the nose, and not from the ear, and the fracture was found to traverse the sella-turcica, the lining membrane of which was torn. In another, in which the fluid came from the right ear, the dura mater was uninjured and adherent throughout; two fissures proceeded from the floor of the left orbit—one began at the inner side of the orbital cavity, went backwards, followed the sulcus of the cribiform plate of the ethmoid bone on its outer side, and united itself to another fissure, the middle of which passed across the body of the sphenoid bone, in front of the sella turcica; having begun about the middle of the squamous suture of the left side. It took its course inwards, and a little forwards, across the middle fossa of the base of the skull, and ended at the junction of the petrous bone and the basilar process. A small coagulum was found under the dura mater, in the left ethmoidal suture, and in front of the middle fossa, near the external extremity of the foramen lacerum orbitale. On the right, a fissure ran across the petrous bone near the cranial opening of the hiatus Fallopii, which terminated in the jugular fossa, the dura mater lining of which was not torn. A second fissure ran parallel to the

furrow of the vidian nerve, and in front of it, communicating with the right sphenoidal sinus, and terminating behind on the roof of the tympanum. The mucous membrane of the sinus was torn, and in its cavity was some coagulated blood, which was continued into the nasal cavity. The first of these fissures opened a communication between the cavity of the cranium and that of the vestibule, and the second between the cranium and the tympanum. The membrane of the tympanum was found torn, the stapes broken across, and a free communication opened between the vestibule and middle ear through the foramen ovale. The membranes of the brain were uninjured.

From the whole of the cases which have been examined, Dr. Laugier infers: 1. That the appearance of the watery fluid in the ear, always indicates fracture of the petrous portion of the temporal bone, but with hardly any appreciable separation of the pieces from each other. 2. That an effusion of blood between the dura mater and the bone is constantly observed over this fracture. 3. That laceration of the membranes of the brain is not essential to the production of this symptom. 4. That if the fractured portions of the petrous bone be separated a line or two from each other, blood alone continues to be discharged from the ear, but no watery fluid.

The fluid cannot be that of the cerebral cavities, but is the serosity of the effused blood, squeezed out by the pressure and motions of the brain, and filtered through the narrow fissure. The objections to this opinion are: 1st. The quantity of watery fluid which sometimes escapes. 2d. The differences observed between the fluid and the serum of the blood. In one case nearly twenty ounces were discharged in three days, and in another ten ounces in forty-eight hours. This appears too large a proportion to the coagulum found under the fissure, but the latter having been subject to compression is found almost dry, which at least proves it to be one source of the fluid. In wounds of the soft parts, with effusion of blood into the wound, when this ceases to flow externally, a serous discharge which saturates the lint and compresses, succeeds, and this is exactly what happens in the case of the ear. Dupuytren always concluded, from the appearance of this watery discharge from deep wounds, that hemorrhage had taken place within. In both cases it comes from the effused blood, and also from the lacerated vessels themselves, after they have ceased to pour out blood. The fluid from the ear differs chemically from serum in containing a double portion of chloride of sodium, and although heat and nitric acid produce no coagulation, shreds of coagulated albumen or fibrin are observable in it; but Dr. Laugier does not consider the analysis sufficiently exact to confer much weight on any objection that might be raised. That the origin of the fluid is not from the natural cerebro-spinal fluids is obvious, from the membranes of the brain being in many cases uninjured. That it is not the fluid of Cotugno is plain from its quantity, and from the fact that in many cases the openings of the internal ear remain intact.

SECT. II. NATURE AND CAUSES OF SURGICAL DISEASES.

Art. 53.—*On Lymph Abscess.* By Professor Chelius and Mr. South.*

Nasse describes a case in which a powerful, healthy young man, in consequence of an external injury, had a swelling formed on the upper part of the thigh, the contents of which, after opening, perfectly resembled lymph. The pouring out of a clear, transparent fluid, could not be allayed by any treatment recommended for lymph-swellings, and the patient was exposed to the danger of hectic consumption. The local use of a solution of nitrate of mercury alone brought the secretions of the lymph-vessels to a close. This case proves that a collection of lymph in the cellular tissue is possible, as the consequence of an actual tearing of lymph-vessels by external violence, the exudation from which ceases only by obliteration of the torn vessels. Cases of this kind are, however, undoubtedly very rare; to them alone can be applied the term *lymph-swelling* in its proper sense, and therefore the opinion, "*that the cases commonly spoken of as lymph-swellings are merely modifications of abscesses,*" is rather confirmed than contradicted. This opinion Langenbeck has also advanced, although, he adds, that not unfrequently a swelling is observed on the elbow, which is formed sometimes from a local cause, and sometimes also without, situated immediately on the olecranon, and containing a clear lymphatic fluid enclosed in a cyst, which deserves the name of lymph-swelling. I must yet deny this assertion, as this swelling at the elbow-joint is a dropsy of the mucous bag there situate, and may be compared to the *hygroma cysticum patellare.* Just as little also can I agree with the opinion of Ekl, who considers the lymph-swelling as an expanded mucous bag in which there is a diseased secretion going on. Zembsch, according to Kluge, in order to accommodate the different opinions of writers, distinguishes, 1st, the acute and chronic lymph-swelling, as idiopathic and symptomatic disease; 2d, the false lymph-swelling or lymphatic abscess.

Mr. South says: a case marked in my note book, "Collection of Synovial Fluid within the Femoral Sheath," which occurred in St. Thomas's Hospital, in 1839, seems to me more nearly allied to the lymph-abscess of this paragraph, of which I was then ignorant, than to a collection of synovia, as I thought it perhaps might be. The patient was a healthy country lad, seventeen years old, who three years previously had received a blow on the upper and outer part of his left thigh, but seemed to have recovered from its effects. Two months since he noticed a swelling on the outside of the same thigh, about a hand's breadth above the knee-cap, which gradually increased both downwards and upwards, so that at his admission it occupied the outer and fore part of the thigh, from a little above the knee to near the great trochanter, fluctuated distinctly, and was presumed to be an abscess in the outer chamber of the femoral sheath. Fifteen minims of tincture

* System of Surgery, p. 48.

of muriate of iron in mucilage, thrice a day, were ordered, to excite absorption, which was continued for nearly three weeks without benefit. The thigh then having increased, and fluctuation and swelling having extended about the whole knee, I made an incision two inches long, about the middle of the outside of the thigh, expecting to evacuate pus or open the femoral sheath; but neither pus nor any other fluid escaped, although I cut into the *m. vastus externus* an inch deep. A tent of lint was left in the wound to keep it open, and hasten the escape of pus if any should make its way through the wound; but none appeared, and in the course of a fortnight the wound had entirely healed. The tincture of iron, which had been continued to this time, was now left off, and two grains of iodide of iron thrice a day ordered in its stead. A week after the whole thigh was wrapped in mercurial ointment, and swathed in a roller. This treatment was continued for three weeks, but without any diminution in size, or apparent change; fluctuation was still very distinct. It was therefore determined to introduce a grooved needle about the middle of the thigh, and some fluid very similar to synovia escaping, an abscess lancet was then thrust in, making an opening an inch long in the skin, and half its length in the sheath, from which escaped about twenty ounces of the seemingly synovial fluid, which nearly emptied the cavity, leaving a rather moveable lump about the middle of the fore part of the thigh, the character of which I could not make out. The edges of the wound were carefully brought together, the limb rolled, and in four days union had taken place. A week after, another free puncture below the former voided a quart of the same fluid as before, and on applying heat it coagulated speedily and almost entirely. The wound was left open, and a roller applied above and below it; but in the course of a week it had again united, and fluid was again secreted, though in smaller quantity. A solid but moveable swelling had at this time also formed to some extent round the wounds. The iodide of iron was then omitted, and instead was ordered decoction of sarsaparilla four ounces, with five grains of iodide of potash twice a day; the whole thigh to be enveloped in ointment of iodide of potash. In three weeks the solidification had increased, and the fluctuation generally was less distinct, and soon afterwards the ointment was given up, and mercurial plaster applied. Two months after having begun to take the iodide of potash, the thigh had much diminished, there was less fluctuation, the middle outer skin was almost solid, and there was less effusion about the knee. The diminution of size and fluctuation continued, and in about two months the patient was able to walk about. Four months afterwards, when he left the hospital, the swelling about his knee, although not completely subsided, had so considerably diminished as not to interfere with his walking.

This must be regarded as a distinct disease, and we do not find it described in other systematic works.

Art. 54.—*On a Disease of the Tongue.* The appearances of this disease, as described by Dr. Heming, although varied in degree are uniform in character. In the early symptoms the tongue is œdematous, sulcated, and prone to become ulcerated on the borders of the sulci,

or in parts which may be irritated by the contact of a decayed or ragged tooth; the surface then becomes morbidly smooth in longitudinal streaks, the papillæ being apparently obliterated; the whole organ assumes the same character, becoming dry and hard in its texture, the ulceration becomes more marked, is sometimes superficial, and in some cases forming deep ragged ulcers; in one case the ulcers had pierced entirely through the organ. Dr. Heming detailed five well-marked cases; they all occurred in females, and the general constitutional health was much impaired, the patients suffering from sick headaches, deranged digestion, œdematous ancles, &c.; in some cases the disease was of many years' continuance. In the treatment, the restoration of the general health is of primary importance: after the ordinary aperients, soda and cicuta should be given, and continued during many weeks. The most useful local application is nitrate of silver; by perseverance every case under Dr. Heming's care got well.

Report of the British Association for the Advancement of Science, 1845.

ART. 55.—*Polypus of the Rectum.* By Professor SYME.

(*The London and Edinburgh Monthly Journal*, July 1845.)

This disease presents itself in three different forms, of which one usually occurs in childhood; this does not appear much beyond puberty, and, with one exception, Mr. Syme has not met with it beyond the ninth or tenth year; it is extremely soft and vascular, of a florid red colour, and assumes the form either of a worm from one to four inches in length, or of a strawberry with a connecting footstalk two or three inches long; and it seldom protrudes, except when the bowels are evacuated, and then admits of ready replacement, though not without occasional hemorrhage, which may be of considerable amount. Its vascularity, and attachment above the sphincter, are reasons against removing it by excision, and Mr. Syme has always employed the ligature, which has never been attended with any disagreeable result.

The disease appears in adults in two very distinct forms:

1. The growth is soft, vascular, prone to bleed, lobulated or shreddy, and malignant-looking, so as on the whole to resemble very much the cauliflower excrescence of the os uteri, but possesses a peduncle of firm texture, capable of sound cicatrization after being divided. The profuse, frequent, and protracted bleeding which proceeds from this sort of growth, renders its removal an object of great consequence; and this may be effected very easily, with perfect safety, by transfixing the radical cord of connexion with a double ligature, tying the threads so as to include a half of it in each, and then cutting it across, a little below the constricted part. In one case Mr. Syme could not accomplish protrusion of the tumour, but guided a ligature on his finger, and tied it on the neck within the rectum. It is more satisfactory to draw the swelling beyond the sphincter, so that the sound and morbid parts may be distinguished with certainty; and this can usually be done with great facility, although the growth has attained a large size. In one case, successfully removed, it was as large as an orange.

2. In the other form, the polypus of adults is of a firmer consistence,

smoother surface, and of a more regularly spherical or oval form, so as to resemble the growth which in general constitutes *polypus uteri*. The symptoms are rather annoying than seriously alarming, and the patient is apt to delay requiring assistance. In the case of an old lady, the tumour was about the size of a cherry, with a long stalk, and the surgeons were assured that it had protruded, every time the bowels moved, for twenty years. In another case, the tumour was nearly as large as an egg, had a cuticular covering, and appeared to have existed for a period equally long. Mr. Syme has always removed these growths in the manner here described, and never met with the slightest consequence of a disagreeable kind.

Art. 56.—*Fracture of the Scapula by Muscular Action.*

By Dr. Heylen.

(*Annal. de la Soc. Méd. d'Anvers*, and *Journal de Chirurgie*, Mai 1845.)

H. S., aged 49 years, a labourer, of excellent health, "dry" constitution, but with muscles well developed, returning from market the 9th of November, was jumping into his cart, when the horse set off at full gallop. Not being able to scramble into the cart, and not daring to let himself fall for fear of being caught by the wheels, he held himself on the edge with his left hand, which had to support the whole weight of his body, whilst with his right hand he held the reins of the horse, and tried to stop it. Thus suspended by the left arm, and not venturing to change his position from the rapidity of the motion, he must have made great efforts to preserve his equilibrium, until, after having proceeded a hundred yards, the animal stopped, and allowed him to put his feet to the ground. He did not at first feel any pain, but found some difficulty in approximating the arm to the body.

In the evening he felt a sharp pain in the left shoulder, which, by the least motion of the arm,—on coughing or sneezing,—became a lancinating pain. He remained in this state until the 11th, when he applied to Dr. Heylen, thinking he had sprained his shoulder. On examination the following symptoms were observed:

The shoulder presented no manifest deformity when the arm was applied to the trunk. It was not greatly swollen. On separating the arm from the trunk and raising it, the hand could be easily applied to the head. He was prevented by pain from doing this himself, without the aid of the other hand. On letting the arm fall, a degree of rigidity was observed in its motion, and it was only by raising it that it could be returned to its original position. At a certain point, the patient screamed, and said he heard a cracking, which was also felt at the hand. No loss of continuity could be detected in the clavicle or humerus. On examining the shoulder it appeared to be normal, yet it was certain that bony crepitation was felt. On sliding the finger along the spine of the scapula, a depression was found in the middle of the apophysis; and, on pressing the most elevated part, it gave way with crepitation. This was also produced on rotating the arm, the finger being placed on the spine of the scapula and also on the clavicle. To determine whether it was a fracture of the spine, the base being separated from the body

of the bone, a finger was placed on the coracoid process while the arm was rotated, when crepitation was felt; the shoulder did not present that deformity described by authors as characteristic of fractures of the acromium and of the spine of the scapula. It was now inferred, either that the neck was fractured or that the spine at its basis was completely separated from the body of the bone. The exact diagnosis was difficult, for the displacement was little marked, the fragments being retained in juxta-position by the muscles of the shoulder-joint which retain the head of the humerus in the glenoid cavity.

Authors generally agree that fractures of the scapula are always produced by the application of direct force. In the above case there was no trace of violence, no ecchymosis over the part, and, according to the patient's account, nothing had touched the shoulder. Muscular action must accordingly have caused the fracture.

Art. 57. — *Dislocation of the Head of the Tibia, forwards and upwards.* Anne Byrne, a healthy woman, æt. 35 years, admitted into the Richmond Hospital, June 21st, 1845, states that she was carrying a heavy load of metal on her back, when her right heel slid forwards rapidly, the knee at the same time being directed inwards, with a twisting motion; she fell to the ground, from which she was unable to rise; was immediately carried to the hospital, where the following observations were made by Dr. Hutton, under whose care she was admitted. The limb lay extended, and was an inch and a half shorter than the other; the foot was inverted, but not fixed in that position; the patella was pushed upwards, its inferior border being directed forwards, and its posterior surface downwards, resting on the articulating surface of the tibia: this could be distinctly felt when the patella was pressed to one side, which it was very easy to effect. A transverse sulcus bounded the patella superiorly. The anterior surface of the thigh was on a plane considerably behind that of the leg, which was twisted a little inwards; the condyles of the femur were distinctly felt posteriorly, particularly the outline of the external condyle; there was great laxity of the articulation, and lateral motion was easily produced to a considerable extent, particularly in an outward direction; the muscles on the anterior part of the thigh were quite relaxed, and the hamstring muscles could not have been tense as the limb lay extended, and there was little resistance to extension in a right line, so that the dislocation was reduced in a few seconds; the fibula maintained its connexions with the tibia; there was no numbness of the leg, but the pulsation of the anterior tibial artery could not be felt; it was, however, not very distinct in the uninjured limb. This accident seems to be of rare occurrence, and the symptoms of the luxation are not fully described, either by Sir Astley Cooper or Boyer, probably because the injury was deemed by them easy of recognition, and yet the description of this luxation, in the *Dictionnaire de Médecine*, is taken from an unreduced case, mistaken or overlooked by the attending surgeon. In this luxation, Boyer expresses his opinion that the lateral ligaments must be torn as well as the crucial and posterior ligaments of the joint; but in the case here related, lateral motion could not be communicated after the dislocation was reduced,

which seems to prove that they could not have been ruptured, nor even stretched to any great extent. Some variety, however, is to be expected in injuries of this nature, according to the degree of force applied, its direction, and other circumstances.

Dublin Journal, July 1845, p. 487.

ART. 58.—*On Staphylœmatoma.** Dr. Vitz has observed three cases of this disease of the palate which has been called *hœmatoma palati*. It consists in the formation of one or several bladders, filled with fluid blood, and covered by the epithelium of the mucous membrane of the palate or uvula. If punctured, fluid blood is discharged. It causes no other inconvenience than a slight pain in swallowing or chewing, according to their situation. If not punctured, the contents are either absorbed or the tumour breaks, leaving a superficial, slightly painful ulcer, which heals in a few days. The causes are not known. One patient asserts that he has suffered from it once every year. A slight difficulty in eating sometimes precedes its appearance. It is about the size of a hazel-nut, and, in the cases observed, was always accompanied by aphonia, which was invariably cured by puncturing the tumour.

Heidel. Annalen, and *Med. Times*, June 14, 1845.

ART. 59.—*Calculi of the Nasal Fossæ.* By M. DEMARQUAY.

(*Annales de la Chirurgie*, July 1845. *Condensed in the Lancet*, July 26.)

Calculi of the nasal fossæ, which Graaf calls rhinolithes, appear to have been first mentioned in 1502, by Jos. Mathias de Gardi. Cases of this disease have subsequently been given by Thomas Bartholin, 1654; Clander, 1685; Kern, 1700; Vitus Reidlinus, 1706; Wepfer, 1727; Ruysch, 1733; Plater, 1736; Horn, 1788; Saviales, 1814; Graaf, 1828; Mr. Thouret, 1829; and Sir B. Brodie, (*Lancet*, July 6) 1844. The cases quoted by these authors, M. Demarquay gives at length, and founds on them the following description of the disease:

Nasal calculi may exist alone, or in variable numbers. They may develop themselves on either side, and in the inferior or the superior regions of the nasal fossæ. It is, however, more especially in the inferior meatus that they appear to originate. They may be found in the frontal sinuses, or even in the maxillary sinus, and thence pass into the nasal fossæ. They may completely obstruct the cavities of the nose, incline the septum to one side, or even destroy it. Their volume varies from that of a pea to that of a pigeon's egg; their colour is black, gray, or white; their surface is uneven, and their centre is often constituted by a foreign body, or by the root of an incisor tooth They are formed of the elements which are found in the secretions of the nasal fossæ, and in the tears, viz., mucus, phosphate of lime, and the carbonates of lime and magnesia.

The causes which give rise to nasal calculi are obscure. Graaf attributes them to gout, but his own case is the only one in which the gouty diathesis existed. Chronic inflammation of the nasal fossæ,

* The name is taken from Σταφυλη, the uvula, and αἱματωμα, a blood tumour.

and of the lachrymal gland, appear the most probable causes of this affection. In many cases, the calculus appears to have formed round a foreign body. A cherry-stone, for instance, the root of a tooth, or some other substance. The presence of one or more calculi in the nasal fossæ occasions so little annoyance in some as to be scarcely perceived, whilst in other cases the symptoms may be sufficiently severe to necessitate surgical interference. The most frequent symptoms are, a certain degree of dryness in the affected nostril, accompanied by a sensation of obtusion and weight, and by difficulty of respiration. Sometimes there is acute pain in the nose or forehead, of either a constant or intermitting nature. The inflammation of the surrounding parts may become severe, and give rise to an abundant fœtid suppuration. The nose may become externally deformed. The eye may participate in the inflammation, or be bathed with tears, as in fistula lacrymalis. This is more especially the case when the calculi form in the inferior meatus. On dilating the nostrils, the foreign body is to be recognized. When this occurs a metallic sound, or the polypus forceps, should be introduced. The characteristic sound produced by their striking against the calculus will at once show what is the disease. If situated in the frontal sinuses, or very high in the nasal fossæ, they may not be recognizable by either of these modes of exploration. Calculi thus developed have often remained very long without being recognized. Sometimes they have been expelled in a fit of coughing, or sneezing, but they have generally been extracted by the hand of the surgeon. Nasal calculus has given rise to numerous errors of diagnosis, the symptoms which it produces having been attributed to ozæna, to disease of the bones of the nose, &c. Generally speaking, however, it is not difficult for a surgeon, who is aware of the existence of such a disease, to recognize its presence.

The first indication to fulfil in the treatment is the extraction of the calculus, an operation which it is not always easy to accomplish. The extraction may generally be effected with a pair of polypus forceps. It must, however, be done with care, owing to the inequality of surface which the calculi present. When the calculi have been removed, the surgeon must, by an appropriate treatment, combat the inflammatory symptoms to which they have given rise. Emollient and astringent injections are often very useful. If it is supposed that the presence of the calculi is connected with any general diathesis, this must be treated by appropriate remedies.

Art. 60.—*Cancer of the Anus.* By J. M. Arnott, Esq.

(*Condensed from the Medical Gazette*, August 2, 1845, p. 713.)

John Little, 61 years of age, for thirty years past a gardener, presented a tumour, the size of an orange, projecting at the anus, which might at first sight, from its form and seat, have been mistaken for a prolapsus ani.

The tumour was of a globular form, attached by a broad base, had an irregular surface of a grayish-yellow colour generally, but in parts red, and secreting from the whole a very offensive discharge. The aperture of the anus, which was not at once discovered, occupied the

most prominent part of the surface of the swelling, not exactly in the centre, though the whole contour of the opening was involved in the disease. Although the morbid mass extended under the surrounding skin, it was apparently so distinctly circumscribed and so moveable, as to lead to the inquiry if it might not be removed by operation. A very brief investigation of the case settled this question in the negative. On passing the finger into the bowel without pain or hindrance, although the mucous membrane was smooth and apparently unaffected, there was felt at the posterior part, about an inch and a half up, some irregularity in the subjacent tissue, and a hard nodule moveable under the finger. There were enlarged glands in both groins, and the patient had the true aspect of cancerous cachexia.

He represented the disease as having begun twelve months previously, as a small pimple on the verge of the anus; that it soon broke, discharged a little and healed; that it broke again and healed; and that this was repeated several times, whilst the part increased in size; that the swellings in the groin began four months ago, when the pain he felt therein, and the shooting pains in the anus, obliged him to give up work. His appetite was much impaired, he had sleepless nights, he gradually got more emaciated, and died in fourteen months from the commencement of the disease. Before death suppuration had taken place around the enlarged glands, with great aggravation of his sufferings. After death a firm medullary mass, the size of an egg, was found on the edge of the pelvis, two inches above Poupart's ligament, on the left side, and tubercles of the same character in the liver and both lungs.

ART. 61.—*Malformations and Congenital Diseases of the Organs of Sight.* By W. R. WILDE, Esq.

(*Dub. Journ.*, Sept., p. 81. *Continued from* Vol. I *of the Abstract*, p. 93.)

MALFORMATIONS OF THE CONJUNCTIVA. 1. *Alterations in colour.* The conjunctiva sometimes assumes uncommon hues. It has been observed of a deep blue tint in the white races. In one remarkable case it was black. Nævi have been observed to have their seat in the *conjunctiva bulbi.* A case is quoted from Von Ammon, which presented the characters of a simple ecchymosis in the centre, and of a vascular network round its margin. 2. *Morbid growths.* Tumours of various kinds, fatty and sarcomatous, with and without hair growing from their surface, are found upon the conjunctiva bulbi. Several have been recorded under the designation of *lipoma crinosum*, which most frequently occur over the junction of the cornea and sclerotica. Mr. Wardrop and others have given multiplied instances of locks of hair growing from the surface of the eye itself. These congenital morbid growths are frequently observed in the lower animals. 3. *Xeroma.* In a case of this affection described by Mr. Wardrop, the whole conjunctiva appeared to be converted into a thin dried bladder, sufficiently transparent to permit the sclerotica and cornea to shine through it, and to be distinguished from one another, but so opake as to destroy vision. The conjunctiva palpebræ had the same shrivelled appearance, there was a deficiency in the prolongation of the membrane, and the eyelids adhered to the globe so that they could neither be separated

far from it, nor could the edges of the eyelids be brought sufficiently together to cover the eyeball, apparently the result of some adhesive inflammatory action between the lids and the globe going on *in utero*. The openings of the lachrymal glands were obliterated, and the eye completely deprived of tears.

ALTERATIONS IN THE STRUCTURE, SIZE, AND SHAPE OF THE CORNEA. The cornea alone may be altered in transparency, thickness, size, form, and curvature, but its malformations seldom occur singly; they are generally in connexion with micropthalmus, and often with defects of the iris and pupil, yet the congenital defects of this part more nearly resemble those which occur from accident in after-life, than the affections of any other structure of the eye.

1. *Opacities.* Sclerophthalmus is the term given by Keiser to congenital opacities of the cornea, resembling in characters—leucoma,—when found occupying the periphery, making it look as if the sclerotica had partially grown over and dimmed its surface. A knowledge that the transparency of the cornea commences at its central part, and proceeds gradually to its sclerotic border, tells why the arrest occupies the situation it usually does. Two forms of opacity present at birth, differing not in intensity, but in appearance, from the difference of their causes. The true congenital opacity is the result of an arrest of development from the time the cornea had a pearl-coloured aspect, which is retained wholly or in part at birth, and appears to depend upon an interstitial deposit between the laminæ; which deposit may be absorbed after birth. Numerous cases are referred to, in which the subjects were blind at birth, but ultimately recovered their sight. The practitioner should be well acquainted with this form, as in such a case his prognosis may in general be favorable.

Sometimes an opake ring, exactly resembling the *arcus senilis*, is observed at birth. It may be called *annulus juvenilis*. It may be distinguished from microcornea by the remains of the general congenital opacity, by the overlapping of the sclerotica, by its defined edge, and by a diaphanous ring external to the opake one. Von Ammon's observations lead to the conclusion that these corneal defects are hereditary.

Megalacornea. A total darkening of the cornea, not the result of evident inflammatory action and disease *in utero*, has been described by Farrar, Walker, Ware, Von Ammon, and others. Sometimes the entire cornea is opake and of a whitish pearl colour, polished like a mirror, vaulted, apparently hypertrophied, and approaching a staphylomatous character; giving the entire bulb a more globular form. A remarkable case is quoted from Ammon, which partially cleared by the fourth year after birth. Farrar published three cases. Two of them cleared perfectly in less than a twelvemonth. The third was only partially recovered at the end of two years. In the last case there was a congenital pterygium.

Cornea globosa. Here the insertion of the cornea into the sclerotica is round and defined, but the cornea itself is larger, and more vaulted than natural, giving to the eye that peculiar glancing, metallic appearance observed in the *staphyloma pellucida*, a disease with which it has frequently been confounded. There is a second form of congenital

opacity obviously caused by disease *in utero*, in which inflammation and its results take place as in ordinary uterine ophthalmia. The disease may run through its entire course previous to birth and produce ulceration, sloughing of the cornea, prolapsus iridis, synechia, or staphyloma. Several most interesting cases are quoted. In one a child was born with synechia anterior; and two brothers in Manchester were born with their right eyes staphylomatous.

Microcornea. A diminutive size of the cornea with a natural sized globe. The case of a child eleven years old is given, who was born with the affection at the seventh month. It gives the eye a wide staring appearance, owing to the corneæ allowing the white sclerotica to appear above and below their circumferences, whereas in the natural eye the upper lid overhangs the superior edge of the cornea, and the lower slightly envelops its inferior margin. There are other peculiarities about the eyes, with very severe myopia. In most cases of this peculiarity the cornea is either oval or of a very irregular shape, looking as if the sclerotica grew in or over it, and it has to be remembered that it is only in the third month of utero-gestation that the distinction between the cornea and sclerotica is completed.

3. *Cornea Conica.* Known under the terms, *hyperkeratosis*, ochlodes, staphyloma pellucida, conical cornea, &c: consists in a conical projection of the cornea, generally in the centre, but sometimes at one side, while its transparency remains unaffected. At times congenital. It increases after birth. Observed by Von Ammon in three sisters of the same family. The circumference of the cornea remains in its natural state, but the apex has become thinned, appearing as if the laminated cornea had given way, allowing the elastic remainder to bulge out through its layers. In some cases there is also an opacity at its apex, supposed by some writers to be caused by its rubbing against the upper lid. Some have asserted that it occurs congenitally in conjunction with a peculiar sugar-loaf form of head, and it is remarkable that in China, where this form of head prevails, a great number of cases of conical cornea occur. It differs from cornea globosa in the latter not being conical, and having no central opacity; besides, in this, the cornea is said to be peculiarly thickened throughout. Both in cornea globosa and conical cornea, when they occur as a sequel to inflammation, the sclerotica is often implicated, the abnormal curvature commencing in the sclerotica; in the true congenital disease the sclerotica is unaffected.

4. *Cylindrical Cornea.* The curvature of the horizontal plane being naturally less than that of the vertical plane of the cornea, this term may be applied when this exceeds the usual extent. Mr. W. Jones called it "the cylindrical eye." It gives rise to irregular refraction; causing a circle to appear an oval, a point a line, &c.; in fact, lengthening out an object in one direction, and compressing it in another.

5. *Plurality of Corneæ.* Thus, it is sometimes double, as occurs in *monoculi*.

6. *Absence of the Cornea.* Himley gives a case of micropthalmus, in which the blueish sclerotica passed over the place of the cornea, in the same form and curvature as the rest of the globe. It was true sclerotica and not opake cornea. Other instances have been related.

The author brings forward some further most interesting cases, demonstrative of micropthalmia being sometimes an hereditary affection. A man, living in the neighbourhood of Saverne, lost his right eye by accident. His daughter was born with micropthalmus of the left eye. She had two sons; the elder born with this vice of conformation in both eyes, and the younger in but one only, the right. A woman, whose eyes were quite perfect, but whose mother had micropthalmus, married a man whose grandmother was deaf and dumb. She had three boys and two girls. The girls were both affected with micropthalmia, one of them was deaf and dumb, and had moreover complete absence of the iris in one eye; the other has had a child deaf and dumb, and has also micropthalmus and coloboma iridis.

The author records a remarkable case which has recently come under his own observation of micropthalmia, attended with coloboma iridis, convergent strabismus, and nystagmus. The left eye is a little more than half its natural size, but the right somewhat larger.

[We regret that our space will not allow of a more lengthened abstract of these most interesting and highly important papers.]

Art. 62.—*Lachrymal Calculus.* By Professor Syme. A farmer, 37 years of age, applied on the 28th of August, on account of an obstruction in the lachrymal passage. He stated, that between four and five years ago, he had let a little lime get into the eye, and in consequence suffered some uneasiness, which did not afterwards completely subside. Various ointments and other applications having been tried, without affording any relief, his mind was at length made up to suffer any operation that seemed requisite, under the impression that his complaint depended upon obstruction of the tears.

There was considerable swelling and redness at the inner angle of the eye, and, when pressure was applied here, a discharge of turbid fluid from the lower punctum. On more careful examination, it appeared that the swelling was not in the situation of the lachrymal sac, but rather in the duct leading to it from the inferior punctum; and Professor Syme also ascertained, by passing a probe from the nostril upwards, that the nasal duct was perfectly free. He therefore introduced a gold probe into the inferior punctum, and immediately detected a concretion, which was readily extracted, after the orifice and adjoining part of the sac into which the duct was dilated had been opened sufficiently by fine-pointed scissors. It was about the size of a barley-pickle, of an irregular form, with tuberculated surface, and of a dark-brown colour, so as very much to resemble a mulberry calculus in miniature.

This case is the only one of the kind that has fallen under Mr. Syme's notice.

Monthly Journal of Medical Science, October 1845.

Art. 63.—*Inflammation of the Spinal Chord from Injury to the Vertebræ.* By Thomas Inman, M.D. A. B., a porter, aged 45, fell backwards against a wall, from a ladder, striking his head in its descent.

Immediately after the fall he was completely paralysed, respiration

being carried on by the diaphragm alone; his senses were unaffected; no particular pain was complained of; fracture was suspected, but no manipulation was resorted to for fear of increasing the mischief. The next day he was able to move his arms a little, and two days after could move his legs. On the third day the arms began to twitch, and continued in a state of tonic contraction; some power of motion remained in the legs till the sixth day, when the paralysis was complete. There was never any sensation in the lower, and very little in the upper extremities. Dull aching pain was complained of in the neck. A large slough rapidly formed on the sacrum, and death ensued on the tenth day after the accident.

Post-mortem examination revealed a fracture through the body of the seventh cervical vertebra passing obliquely, and partly through the intervertebral cartilage between this and the first dorsal. The *dura mater* of the chord was lacerated at this point to a small extent, but no effusion of blood had taken place. With this exception, all the membranes looked perfectly healthy. On examining the chord, however, an appearance was noticed anteriorly, like an ecchymosis, and on making the incision at this part, the medulla was found reduced to a brownish pulp. A stream of water being gently turned upon this, washed away the softened portion, leaving a cavity large enough to hold three peas. Its situation corresponded to the giving off of the lower nerves going to form the brachial plexus. The chord was healthy in every other part.

The other viscera were examined, but presented no remarkable appearances.

Report of the Liverpool Pathological Society.
Edinb. Med. and Surg. Journal, Oct. 1845.

Art. 64.—*Imperforate Anus with absence of the Rectum and Colon.* By Dr. Lehmann.

(*Medicinische Verein. Zeitung. Lancet*, Aug. 16.)

The author was called to a child who had been born five days, and who up to that time had passed nothing from its bowels. It was a boy of mature but weak development. From the account of the mother, vomiting of a thickish green fluid had occurred several times. The raphe of the scrotum was continued to the point of the os coccygis, and in its centre, in the place where the anal opening is usually found, were two strong folds of skin united together. The abdomen was distended, and hard, like a drum, and the windings of the small intestines were visible below the skin. A puncture an inch deep was made between the folds, with a lancet, and kept open with charpie; the following day a trocar was introduced, to the depth of two inches. It seemed by the sensation communicated, that the instrument had been pushed into an empty space. No fæces came away, and the child died on the day after, the seventh from birth.

On opening the body, the small intestines were found distended with gas, and in many places filled with meconium, and with yellowish-

coloured fæces. The colon and rectum were altogether absent. The ilium went to the place were the colon should have commenced, and there terminated in a blind sac, distended with meconium. There was no communication between the sac and the neck of the bladder. The puncture had perforated the cavity of the abdomen, without reaching the blind sac.

ART. 65.—*Rupture of the Tendon of the Triceps Cruralis on both sides.* But few examples of a rupture of this strong tendon have been recorded, more especially of its occurrence in both limbs. In two cases cited by Ruysch the accident was produced by the patients falling upon their knees, the legs being violently flexed on the thighs. In a case by J. L. Petit, the rupture occurred in attempting to jump a ditch. In another case it is said to have been produced by falling upon the knee in descending a ladder, and that the fall on the knee produced the rupture; but when the knee struck the ground the rupture must have already taken place, or it could not then have happened—the ground necessarily limiting the extension. In a case by Sancerotti, a heavy subject slid down the sides of a ladder, and fell with his two legs folded under him, he partially ruptured the tendon of the patella in the left leg and completely in the right leg. In a case by Boyer, the patient lost his equilibrium while skating, and was in danger of falling backwards; in the effort made to throw his body forwards, he broke the tendon of the extensor muscle of the right leg. In a case by Dupuytren, in consequence of a sudden and violent curve of the trunk backwards,—in one case by drawing the foot out of a hole,—in another by wrestling,—in another by falling forwards from a ladder: and in various other ways this accident is said to have occurred. In a case lately treated in the Hôtel Dieu, at Paris, under M. Roux, the accident occurred to a young man descending a ladder. He had high-heeled boots. Being caught in one of the steps of the ladder by his heel, he instinctively threw himself backwards to prevent his body falling forwards, and in this violent effort the ligament of the patella was ruptured in both legs. He distinctly heard a snap on the right but not on the left side.

"It is during the contraction of the muscle on which it depends, remarks Delpech, that a tendon may be ruptured. It appears to the contrary, that it is during the action of their antagonists, or of a new force opposed, that muscles are torn." (*Maladie Reportées Chirurgicales.* t. 1, *p.* 184, *et s.*) M. Malgaigne also maintains that "when a sudden force tends to elongate the muscles at the period of a powerful contraction, the tendon snaps. The rupture of a muscle takes place only when the muscle is stretched or elongated, the rupture of a tendon only when the muscle is contracted and shortened."

This appears to be the surgical doctrine, but in the above case the triceps cruralis could not be contracted while the trunk was powerfully curved backwards to prevent a fall forwards, and the same remark may be made respecting Sancerotti's case, who fell with the triceps extended to the uttermost. It was, also, while throwing himself backwards to avoid a fall forwards, that Dupuytren's patient ruptured the tendon in question. In some of the cases, it appears that

Delpech's doctrine holds good, as in Boyer's case above referred to, although it is difficult to understand the rupture taking place at the fixed point, since to maintain the position of the trunk the muscle must have had its fixed point below, and we should rather expect the accident would take place at its superior insertion, that is to say, at the point of resistance.

The case was treated by placing the two limbs extended on a plane inclined from the feet to the pelvis, and maintaining them with a posterior splint and bandage in a state of permanent extension. The accident cannot be regarded as trivial, since, of fourteen cases referred to in a memoir by Demarquay, five only were understood as having had a completely favorable result.

Gazette des Hôpitaux, June 14, 1845.

ART. 66.—*Dislocation of the Sternal end of the Clavicle backwards.*

By WILLIAM BROWN, Esq., Callington.

(*The Medical Gazette*, Aug. 1, 1845.)

On the 2d instant a well-known Cornish wrestler, commonly called the "Little Roper," was brought to us (Dr. Hender and myself) with an injury sustained in the ring. He had been thrown to, or rather upon, the left shoulder, so that this was forced forwards. The great force of the fall was assisted by the weight of the other wrestler coming down upon him. Instead of the clavicle giving way in its outer curvature, as one would have expected, the sternal end of the bone was completely driven backwards. There was much pain, with some embarrassment of breathing. The case being clear, the plan of treatment adopted was the method of Desault, as modified and practised at University College Hospital, for fractured clavicles; that is, the reduction, and keeping of the parts in place, having to be effected *in*-directly, the limb was put up with the wedge-shaped pad in the axilla; the elbow, in order to be made to act as the lever, being fastened to the side by means of a roller passing alternately round the body, and over the right shoulder. Thus the elbow was supported, and the fore-arm fixed upon the breast, whereby the shoulder was well kept back in addition to the primary object being obtained, of confining the elbow to the side, and so making the pad effective as a fulcrum.

Perhaps one reason why the articulation instead of the bone gave way was, that though wide, he was still very flat in the chest.

SECT. III. THE TREATMENT OF SURGICAL DISEASES.

Art. 67.—*Recto-Vaginal Fistula successfully treated by a new Operation.* By M. Jobert, Hôpital St. Louis.

(*Gazette des Hôpitaux*, Août 7, 1845.)

Marie Calmès, aged 26 years, of a good constitution, and in perfect health, became pregnant for the first time towards the end of 1840. Nothing particularly occurred during the pregnancy; she was twelve hours in labour, the head presented, and was very large, but delivery took place without the aid of instruments. The child lived only twenty-four hours.

Nothing particular occurred during the first four days after delivery, but on the fifth day the patient found that she could not retain her urine; that it did not pass by the natural passage, but continually flowed per stillicidium through the vagina. She continued in this state a month, when, finding that she was continually wetted by the flow of urine, she became a patient of the late M. Breschet, at the Hôtel Dieu. She left this in about a month, went to her family for a year, then entered La Charité, under M. Velpeaux, where she remained three months, and from this time the disease was regarded as incurable.

In October 1843, ten months after leaving La Charité, she was admitted into St. Louis, under M. Jobert. At this time the greater part of the vesico-vaginal parietes, and the inferior parietes of the urethra and of the neck of the bladder were destroyed. Six weeks after her admission M. Jobert resorted to the operation of elytroplasty, and a large flap was taken from the right nates. The flap mortified, and, after the lapse of five months, the patient left the hospital unrelieved.

In March 1845, she was again admitted, having begged of M. Jobert to try another operation to relieve her from a complaint which rendered her life insupportable.

Upon this occasion, in order that there might be a fixed point forwards, and to meet the necessity of applying sutures, M. Jobert in the first place directed his attention to the restoration of the inferior parietes of the urethra and the neck of the bladder. The operation for this purpose succeeded in part, and he thus obtained in the centre of the normal urethra a kind of band, about two thirds of an inch wide, extending from one nymphæ to the other, simulating sufficiently well the original urethra. Below this band there was an orifice, representing the anterior orifice of the urethra, through which a female catheter could be easily passed. The urethra was truly formed anew, although of no service.

The patient's state was brought to this—in consequence of delivery, and four years afterwards, she was affected with a vesico-vaginal fistula, situated in the median line directed from behind forwards, parallel to the great axis of the vagina, and of an elliptical shape. It commenced at one centimeter and a half (0·589) from the cervix uteri, and

terminated at the restored urethra. It involved the urethra, the neck of the bladder, and nearly the whole length of the vesico-vaginal septum; its transverse was less than its antero-posterior diameter, and it readily admitted the introduction of three fingers into the bladder. The edges, although thick and irregular, were not indurated, and there were no calcareous incrustations. There were neither adhesions nor contraction of the vagina, the interior of the bladder was smooth, its capacity was not diminished, its anterior extremity had no tendency to prolapse into the vagina, and it contained no calculi. Her general state of health was quite satisfactory, and she was most anxious to be operated upon.

M. Jobert, seeing that the elytroplastic operation could not succeed where there was so great a loss of substance, determined upon the plan of: 1. Elongating as much as possible the portion of the vesico-vaginal septum which was continuous with the anterior part of the cervix uteri, by drawing it from behind forwards, and from above downwards, in order to diminish the loss of continuity in the antero-posterior direction. 2. Bringing together the sides of the vesico-vaginal opening towards the median line, down to the commencement of the new urethra already described. This operation was performed on the 9th of June 1845, in the following manner:

The patient was laid on her back in the lithotomy position, the pelvis was brought to the edge of the bed, so that the perinæum projected a little forwards, the thighs half flexed upon the pelvis were opened wide, and supported by two assistants, who at the same time separated the labia. Museux's forceps were inserted into the neck of the uterus to draw the uterus downwards and forwards to the inferior orifice of the vagina. A transverse semicircular incision was then made above the anterior lip of the os uteri, in the sulcus which the anterior parietes of the vagina forms where it is inserted on the cervix uteri; then conducting the blade of the bistoury from below upwards (the uterus being held down), or rather from the cervix uteri towards the posterior part, that part of the vesico-vaginal septum which remained, and which, as above stated, was a centimetre and a half in size, was in part detached. On drawing forwards the portion of the parietes thus dissected off, it was found to diminish the size of the antero-posterior diameter of the fistula very considerably.

The edges of the fistula were then pared off with the bistoury through the whole circumference, they were then easily brought together and maintained in position by several sutures. In this manner the opening was closed by what remained of the vesico-vaginal parietes itself; on the one hand by drawing its parts together laterally, and on the other by making a portion slide from behind forwards after a previous dissection; this latter part of the operation induced the author to call it *autoplastic union by the sliding process.* The vast loss of substance was thus repaired. The bladder and vagina, which previously formed one vast cloaca, now constituted two perfectly distinct cavities. A piece of agaric smeared with ointment was applied to the anterior parietes of the vagina, and the latter moderately plugged with charpie; then a gum-elastic catheter was introduced into the bladder by the new urethra, and allowed to remain, to pre-

vent the urine accumulating in the bladder, or extravasating over the wound.

June 11*th*. No unfavorable symptoms had occurred, and there was but slight fever. Menstruation took place. 12*th*. A small quantity of urine appeared to flow through the anterior part of the wound behind the urethra. M. Jobert was fearful that the catheter, although still necessary, might destroy the newly-formed urethra. 14*th*. The urethral canal gave way, still the urine flowed by the catheter. 28*th*. The patient rose from her bed.

July 15*th*. M. Jobert examined the patient and found her in the following state: 1. At the bottom of the vagina the cervix uteri. 2. In front of the cervix, and at the superior part of the anterior parietes of the vagina, or rather of the vesico-vaginal septum, a well-marked projection, formed by the flap, which had been detached from the neighbouring parts. 3. More anteriorly the *thick and solid cicatrix*, forming a *sulcus*, directed from behind forwards, indicating the place of union of the two edges of the fistula. 4. In front of this sulcus, as high up as the normal neck of the bladder, the *artificial neck*, and *a depression*, formed by an opening which a female catheter could pass through, and which allowed of the passage of the urine; it was the vesical orifice of the newly-formed parts. A catheter introduced into the bladder might be passed to a considerable distance, and freely moved about, proving that the capacity of the bladder was not diminished. The patient was able to retain her urine for several hours, and to void it voluntarily. She retained it on walking, but less completely than under other circumstances; and, lastly, although no urethra exists, the urine does not fall either into the vagina or on the labiæ, but escapes in a stream through the artificial neck of the bladder. The case was subsequently examined, and the parts found to be still in the satisfactory state above described.

Striking analogies and differences exist between autoplastic union by the sliding process and elytroplasty. In the latter the flap is taken from the exterior, in the former it is taken from the interior of the vagina itself; in the one it is a flap of skin applied to the vesico vaginal sulcus; in the other it is a portion of the parietes brought into contact with the parietes itself; in the latter there is the same structure, the same vitality of tissue; in the former the structure and vitality of the tissues are different.

Before operating, M. Jobert made experiments on the dead body to ascertain the exact relations of the peritoneum reflected from the posterior surface of the bladder over the anterior surface of the uterus, to the sulcus or cul-de-sac, which the superior extremity of the vagina forms round the os uteri. After making an incision through the mucous and dartoid tissue which constitutes the vagina, a dense cellular tissue is found uniting the fundus of the bladder to the vagina; somewhat higher, a lax cellular tissue, which allows the bladder to be pushed forwards, and the operator to get a considerable distance upwards, between it and the uterus, without danger of wounding the peritoneum. The cul-de-sac of the peritoneum is not ten lines, as has been said, but more than fifteen lines, from the cul-de-sac of the vagina.

ART. 68.—*Treatment of Seminal Losses by Compression.*
By M. BRACHET, (de Lyon.)
(*Bulletin des Académies*, Juin 1845.)

The author cites four cases of spermatorrhœa, arising from different causes, all of which were cured in from two to three months by compression in the perineum over the prostate gland. He admits that compression is not applicable to all cases, and that avoidance of the cause of this disease is for the most part sufficient for the cure; but he thinks that it will succeed in every case of atony occasioned by abuse, or even by protracted or frequently repeated attacks of gonorrhœa. He endeavours to show that the injurious influence of the complaint results from the nature of the seminal fluid, the too frequent discharge of which cannot take place with impunity. He further attributes a part of the injurious effects to the too abundant secretion of prostatic fluid; and comparing this fluid with that secreted by the cryptæ of the vagina at the moment of coitus, and in certain cases of leucorrhœa, he establishes an analogy which must exist between those isolated cryptæ in the vagina, and those which constitute the prostate. He then gives a satisfactory explanation of the manner in which compression acts. It produces two effects—on the one hand, it confines the semen in its reservoirs, and accustoms them to tolerate its presence better, and to retain it longer; on the other hand, it modifies the physiological condition of the urethra, of the prostate, and of the excretory organs of the semen. The cure is attributable to this double effect. By modifying the pathological state of the affected parts they are reinstated in their normal condition.

The compressing bandage is formed of a leather belt, from behind which proceeds a thigh strap, at first simple and then bifurcated, to leave the genital organs free, and to be brought round and attached to the belt by two buckles with thongs. The thigh strap has a moveable pad in the middle, which is placed over the point to be compressed and drawn as tight as possible. This simple method differs essentially from the circular compression of the penis by rings, bands, or forceps, all of which are liable to serious accident; the least of which is the repulsion of the semen towards the bladder, which occasions an illusory appearance of a cure, since although the semen does not pass outward, it is not the less certainly evacuated, that is to say, expelled from its reservoirs. M. Brachet brought the above-mentioned cases before the Academy in order that practitioners may determine the real value of the remedy.*

ART. 69.—*Ligature, Incision, and Cauterization of a Nævus on the Superior Lip of an Infant. Cure.* By M. BARNETCHE, Bordeaux.

(*Annales de Thérapeutique*, Mai; and *Lond. and Edinb. Jour.*, July 1845.)

The nævus occupied the whole upper lip of a child 22 months old, and was increasing rapidly. The labial arteries were previously tied

* Annales de la Chirurgie, Juin 1845.

on a level with the commissures. The patient being secured, M. Costes seized the upper lip, and turning it out, M. Barnetche passed a curved needle armed with thread under the arteries, and succeeded with difficulty in applying the ligature. An incision was then carried along the lip, and a considerable mass of erectile tumour seized with a pair of forceps, and cut out with the bistoury. A "sheet" of blood immediately followed. The attempt to stop it by cauterization with acid nitrate of mercury was vain. "A crimson jet of blood projected to a great distance could not thus be stopped;" the child was pale and syncope impending. The actual cautery was applied, and by its means the hemorrhage was controlled. The ligatures were detached on the fifth day, and the eschars on the seventh. On the eighth day there was a recurrence of hemorrhage, which was again arrested by the actual cautery. From that period the lip became indurated, the pulsation which ceased at the time of the first operation did not return, the colour of the lip remained normal, and the cure was complete, except that eight months after the operation there was a slight line of a reddish colour, extending to the left nasal fossa, regarding which there was some anxiety lest its having been left behind should prove a cause of regret.

ART. 70.—*A new mode of applying Ligatures to Nævi.* Mr. Christopherson advises the following modification of the usual method of performing this operation. The plan, which is sufficiently simple, is thus described: "Take a piece of strong silk or ligature, well waxed, and three quarters of a yard in length. Thread a curved needle with the same, leaving the ends equal, and pass it double under the centre of the part requiring to be removed. This done, cut the ligature in the middle, leaving the needle attached to the inferior portion, which is then passed through the skin immediately below the part to be strangulated. Thread the needle with the superior portion of the ligature, and pass it through the skin in an opposite direction, immediately above the part to be strangulated, and remove the needle." In the next place "tie as tightly as possible the two ends of the loop which includes the inferior half of the tumour, and strangulate that portion of the part to be removed. The four ends of the ligature remaining are now to be tied tightly and alternately, the one to the other, and the operation is complete. The whole mass being thus enclosed in a double circle by the ligature, both within and without, must be effectually strangulated."

The advantages said to be possessed by this method are: That it is simple and quickly performed; that it leaves less deformity than the common method; that it can be applied in situations in which other means cannot be conveniently employed; and thus the strangulation must necessarily be complete.

Lancet, June 14, 1845.

ART. 71.—*On the Treatment of Venereal Vegetations.* M. Vidal de Cassis observes, "that there are few surgeons who have not experienced disappointment in the treatment of these vegetations. Dis-

satisfied with the usual means of curing them, as excision, cauterization, and ligature, he was led to the adoption of a powder composed of equal parts of burnt alum and powdered savine, the efficacy of this application is stated to be very great; the vegetations drying and shrivelling up speedily. Two applications in the day are sufficient.

Annales de la Chirurgie, Mai 1845.

ART. 72.—*Case of Œsophagotomy.* By Dr. MARTINI.

(*Wurtember. Medicinisches Correspondenzblatt. Medical Times*, June 14; *Gazette Médicale*, May 31, 1845.)

N. swallowed a large piece of bone during dinner (19th Feb. at noon). It produced impending suffocation and other violent symptoms. Notwithstanding repeated venesections, the bone could not be pushed into the stomach, although more than sixty attempts were made. After the injection of clysters of belladonna, attempts were also made to abstract it with levers and forceps, but without success. Injections of tartar emetic, and œsophagotomy were both strongly objected to by the patient, who could only obtain relief by occasional injections of oil. The patient could not swallow a drop of water. On the 23d of February, the pain was so excruciating, that he declared himself ready to submit to any measure that might be advised. Tartar emetic was then injected into a vein, at about eight o'clock A.M.; this excited such powerful vomiting, that clysters of water, vinegar, and, at last, of tincture of opium became necessary. At four o'clock, P.M., œsophagotomy was performed. The bone being felt from without, above the clavicle, the throat was opened in that situation, and, even during the performance of the operation, it was swallowed by the patient (a sign that he might have been saved, if it had been performed earlier). The operation was successfully terminated, a bandage applied, and cold water, with solution of lead, continually applied over the wound. On the 24th, he was very feverish, the next day the extremities became cold. On the 26th, at two, A.M., there was singultus, and at six, A.M., the patient's sufferings were terminated by death. The *autopsy* showed that the upper and middle parts of the pharynx were gangrenous, and the opening larger than it had been made by the knife. The lower end of the pharynx, the stomach, and duodenum were inflamed. The bone was already near the rectum.

[The reporter in the *Gazette Médicale* observes, that the gangrene was probably produced by the foreign body, and by the numerous efforts made to displace it; and that the case is interesting on account of the means adopted to excite vomiting.]

ART. 73.—*Tumours of the Pharynx and their Treatment.*

By J. M. ARNOTT, Esq.

(*Condensed from the Medical Gazette*, July 21st, 1845.)

1. *Pediculated Tumour.* Anne Gilbert, aged 19, presented herself ten days ago, speaking through her nose and inarticulately, and com-

plaining of great difficulty of swallowing from "a lump in her throat," which had been noticed for three months, although the imperfection of speech and deglutition had existed for a longer period. The patient was thin, but externally there was no appearance of swelling. Behind the isthmus faucium, amidst a quantity of froth and ropy mucus, a tumour of a rounded form was seen rising apparently from below, filling the upper part of the pharynx, and projecting slightly forwards between the arches of the palate. The colour of the tumour was that of the surrounding parts, but its surface was rough and irregular. The finger carried over the root of the tongue could be passed between the tumour and the entrance of the glottis, and a probe could be carried laterally round all that part which was visible, and also superiorly; its connexion posteriorly and inferiorly could not be positively determined; but, from a certain amount of mobility under the finger it appeared that it was attached by a pedicle, and not by a broad base, and probably to the posterior part of the pharynx below the level of the sight.

Mr. Arnott applied a ligature by means of the common uterine polypus tube. A running noose was made of a size to pass over the swelling, and the ends of the thread passed through the tubes; the loop was carried with some little difficulty on the most prominent part of the tumour, and the ends being drawn, the noose slipped over to its base. Being tightened, and a second knot tied, the mass acquired a livid colour, showing it was probably strangulated; but in a few seconds it appeared not quite so dark, and another ligature was easily applied. The tumour was very moveable, had a globular form, and was now twisted off. No bleeding followed.

It was the size of a green walnut, attached by a narrow pedicle, and had an irregular surface, not unlike that of a mulberry greatly magnified, with this difference, that some of the elevations were pediculated. The appearance of a section of the mass presented a singular contrast—that of a firm fleshy substance, of one uniform character, without the least appearance of fibre, cell, or deposit intermixed. In consistence and colour it corresponded with what has been called albuminous sarcoma. Minute blood-vessels were seen ramifying in the uniform and solid tissue.

Under Mr. Tulk's microscope, it seemed made up of caudate-nucleated cells, and its surface was covered with a thin layer of epithelial cells.

2. *Broad-based Tumour of the Pharynx.* Anne Parker had a tumour, five years ago, of globular shape, seated on the left side of the fauces, projecting two thirds across the isthmus, and carrying the uvula before it, bounded by the anterior arch of the palate in front, nearly touching the posterior parietes of the pharynx (which it half filled) behind, and descending inferiorly into this cavity below the level of the root of the tongue, when depressed by a spatula. The tumour was covered by mucous membrane of natural appearance; it had a smooth surface, and felt firm to the touch. The base was broad, and its attachments firm; it was immoveable. Its greatest diameter was from above downwards, in which direction it measured two inches. No trace of the tonsil or posterior arch of the palate on this

side could be seen. The latter was effaced by the distension of the tumour, which no doubt spread over its surface. Pressure gave no pain.

It produced a very uneasy feeling of suffocation and dyspnœa, which was worse at night, or when her head was low. Sometimes she had spasmodic attacks about the throat, so as to compel her to get up, and walk about. These became worse, and were relieved by medicine; they were sometimes produced by swallowing. She was able to swallow liquid and small masses of soft food without difficulty. She had much discharge of saliva, and always "feels a desire to spit up mucus, but cannot." Her health was tolerably good, but she was very low-spirited. The tumour had increased more rapidly since her last confinement. About a year and a half previously she first perceived a small hard swelling, about the size of a hazel-nut. Her attention was directed to it by a suffocating feel in the night. A month before this she met with a blow from a man's fist on the left side of the jaw, and she felt pain till the swelling begun, and some time afterwards. She was then made an out-patient at St. Thomas's, under Mr. Green, who lanced it, and let out some thick black blood. It was blistered, and her mouth was made sore by mercury, and the sub-lingual glands then became enlarged, but soon subsided again. It gradually increased in size, and the symptoms became worse.

Believing the disease to be malignant, Mr. Arnott at first determined not to meddle with the tumour, but such severe spasmodic attacks came on, with dread of immediate suffocation, that she begged to have something done to relieve her at all risks.

The patient was placed on a chair opposite a window, and her head supported by assistants. The mucous membrane was divided freely over the surface of the tumour, and the muscular fibres exposed. These were next divided, and a semi-transparent spot was seen, which was found to be a very small cyst, containing some serum. The mass of the tumour being slightly cut into was found solid, as was expected, and bled freely. The finger was now passed round the tumour, inside a cellular coat or cyst which embraced it, so as to expose its neck, which was very thick, and fixed; a ligature was then passed round it and tied, but the substance of the tumour broke down under it, and portions of it came away, having the appearance of white fibrine. Another ligature was then passed closer to the base than the first, but this also cutting its way through the mass, was tied, and the ligature left on. Under this there was some bleeding, but not to any extent.

The case progressed favorably. The patient had restless nights for some time, requiring muriate of morphine. There was much sloughing, and Mr. Arnott removed several mortifying pieces; diluted nitric acid was applied; the ligature came away on the sixth day; after this, she began to swallow and to speak better; ultimately healthy granulations formed, and the patient recovered.

In performing the operation care was taken to have the actual cautery in readiness, as the only favorable means of arresting hemorrhage should it occur. Mr. Arnott remarks, that in this case—a tumour of very unfavorable appearance, and awkwardly situated,—the life of

the patient had been prolonged already for five years, by an operation not of the most satisfactory nature, although the best that the nature of the case allowed of. This tumour also was one of albuminous sarcoma.

Art. 74.—*Practical Observations on the Operations for cleft Palate.* By Professor Dieffenbach.*

(*Dublin Journal*, Nov. 1845.)

This beautiful, ingenious, and skilful operation, which consists in bringing together the wounds formed artificially in the borders of the cleft palate, and uniting them by means of sutures, owes its invention to Von Gräfe, who practised it successfully for the first time in 1816. After him Roux was the first who repeated the operation, and many surgeons have since that exercised themselves in the same field—Chelius, V. Ammon, Baum, Philipps, Ebel, &c.; and I have been also successful in many cases in removing, by my own methods, the most complicated cases of this nature, as well as bringing the operation into more general use, and rendering its results more fortunate and sure.

The principal object of the operation is to improve the speech; any defect or split in the palate, whether in the margin or on the middle of it, as well as when there is an aperture in the hard palate, causes an impediment in the speech, and a particular snuffling, inharmonious sound. When the defects or splits are greater, and stretch over the whole palate, the speech becomes entirely unintelligible, and the sound of the voice a continual unmodulated noise, a guttural hissing through the throat and nasal fossa; and when the cavities of the mouth and nose are not separated, there is, in speaking, a continued and free emission of the breath. The second inconvenience connected with the division of the palate is the difficulty of swallowing food, especially liquids, which frequently escape upwards through the nose. In the case of double hare-lip (*Hasenscharte* and *Wolfsrachen*), with projection of the inner-maxillary bone in the shape of a truncated knob, there is, on account of the separation of the superior maxillary bones and the palate bone, a deep slit dividing the palate and uvula, which forms both its ends, as the extreme points of the cleft. This is the highest degree of this congenital defect which is connected with hare-lip; but sometimes it occurs without any division of the lip.

Observation shows us the following degrees: the least is where the uvula (*Zäpfchen*) is altogether or partially divided, or where the slit extends more or less into the soft palate, so that it is cleft one half or more, or altogether, as far as the palate bone. If it extends further, the palate bones are separated posteriorly either partially or altogether, or even to the edge of the alveoli; and the lip is either entire or is singly or doubly divided, on one side, together with the bones of that side, while on the other a slit exists in the lip, unattended by separation of the alveoli.

* Die Operative Chirurgie. Von Johann Friedrich Dieffenbach. Erster Band. Leipzig. Brockhaus, 1845, p. 856.

Another direction of this deformity is where it is turned outwards; the lip is divided either like a single or double hare-lip, or the slit extends to the alveolar process on one or both sides, and then approaches the place where the inter-maxillary bone joins the upper middle jaw-bone (*Oberkiefer der Mitte*); and the palate bones are separated anteriorly to the extent of one half or even altogether.

The velum is here sometimes perfect, and sometimes more or less divided, until we again arrive at the highest degree in that direction.

A third form of separation is where it begins both in front and behind, behind with a division of the uvula, and in front with either single or double hare-lip. In the higher degree the slit penetrates backwards into the palate, and in front into the upper jaw and palate bones; and lastly, the slit is still greater, and there remains in the middle of the palate only a small bridge of bone. Sometimes the posterior slit is disproportionally long, or the slit in the palate particularly large, and then that of the lip is small; or the reverse takes place.

All clefts in the lips or palate that have come under my observation belong to one or other of these forms. I have only observed a single case of congenital oval opening in the soft palate, without division of the uvular or palate bones, which occurred in a young medical student.

The breadth of the slit in the palate varies as much as the length; as a general rule, the small slit is narrow, the large wide, and the larger proportionally wider. This depends upon the greater or less contraction of the muscles, which are in some instances weak and thin; in the case of long slit the edges are not widely separated. The cleft in the palate has mostly an elliptic form, widest in the middle, and posteriorly, where the parts of the uvula approach each other; it has seldom the triangular shape: and still more seldom are the sides in straight and parallel lines with a top round. If the cleft extends through the entire bony palate, and through the alveolar apophysis, then there is, as we have already observed, on each side only a narrow rudimentary soft palate which ends in two thin points. The divided palate is sometimes thick and sometimes thin, but the edges especially are often very thin.

If the soft palate only is divided the edges are thick, and the slit not very wide, and here a favorable result may, in general, be expected from an operation; but when the cleft is very wide, the edges are thin, and particularly when the bony palate is divided, and there is only a rudiment of the soft palate on the sides, success is doubtful. A large congenital cleft gives more hope of cure than a small one caused by abscess. The palate closure is less successful in cases of slits and holes caused by syphilitic, scrofulous, and mercurial sores, than by congenital defects; in the first because the palate is made hard and unpliant by previous inflammation: but in the last it is both pliant and extensible. Wounds in the palate which are caused by accidental injuries, or other accidental causes, are the easiest cured by sutures.

The operation on the cleft palate, and that for vesical fistula, are the two most difficult operations in surgery. The situation being unfavorable, the stiffness and sensibility of the parts, and the difficulty of respiration, make this task (in the former) more difficult. The

thinness of the edges, the slight breadth of the surface of the wound, the covering of the mucous membrane, so unfavorable to any plastic process, the continued moisture caused by the increased secretion of saliva, the great tension, the want of support of the partition, and the continual motion caused by breathing and swallowing, are altogether such difficulties to the healing, that a successful operation is really wonderful.

Preparatory to the operation Ebel has already recommended to deaden the sensibility of the parts, either with the finger or a lint pencil, and that the patient should be directed to observe his defects with his mouth open before a looking-glass. This is very useful advice, for, men who suffer from chronic ulcers in the throat, by frequent gargling and pencilling, lose altogether the sensibility of these parts. Nevertheless I never could succeed in these preparations; the patients did indeed, in my presence, put their fingers deep into their mouths, until they retched, but told me, with wry faces, that if they could not dispense with this preparation, they would rather forego the operation altogether. I have, therefore, latterly, dispensed with these preparations.

The following are the instruments used in stitching the palate: 1. A small fine hook, such as is used in the operation for squint. 2. A small, narrow-pointed knife, with an octagonal handle. 3. A long, narrow forceps, with toothed extremities. 4. Straight, feather-spring palate pliers, provided at there distant extremity with a thick, furrowed, button end. 5. Palate needles and lead wire; the first are half an inch long, flattened, and three cornered at one end; and at the other round, hollow, and internally provided with a screw, into which the wire can be fixed: the wire must be of pure lead, and new drawn, for old wire is very brittle. 6. A corn forceps (*Kornzange*). 7. A pair of plain curved scissors; and 8, For the closing of small holes in the palate, a small eared hook and thread-like lead wire.

I. Operation for cleft of the soft palate. At this operation the patient sits opposite the window, the head being supported by an assistant: he then opens his mouth, draws in his breath, and puts down his tongue.

1. *Incision of the edges.* The edge of the cleft palate is seized in the middle by putting the hook through it from within outwards; the knife is then pushed through near the hook, and drawing it with a sawing motion upwards and forwards, a strip about the breadth of a straw is removed; the knife is then turned downwards, and the lower part cut off, pulling it away with the hook. The same is done at the other side. The patient is then allowed a little rest, and to wash his mouth with cold water; but he must not gargle, as the palate is too much irritated by it.

2. *The insertion and closure of fastenings.* If the cleft extends over the whole palate, four or five fastenings are required. The needle is first put in the holder, so that the rounded end fits closely in the furrow, while the point projects in a proper manner. The instrument (needle), thus armed, is passed through the cleft, first in the upper part, and the palate pierced through about three lines from its edge, from within outwards, on one side. When the needle appears

sufficiently advanced through the palate it is laid hold of by the *Kornzange* in the left hand, and loosened by pressing the spring of the needle-holder; the needle and the wire are then drawn out at the mouth with the forceps; the second needle is then put in the needle-holder, and, drawing the wire further out, it is also pushed through the cleft and the palate pierced through on the opposite side, as in the former case, and the needle and wire drawn forward till the centre of the latter comes into the cleft. The ends of the wire, with the needles attached, are then cut off, and the wires twisted together until the edges approach each other a little. This (the twisted ligature) is then turned aside into the corner of the mouth, or the assistant can hold it on the upper part of the cheek. The other three or four sutures are then put in at measured distances, and moderately twisted, by which means the edges are made to approach but not touch each other. The wires are then by degrees twisted more and more, and the coagulated blood of the wound is removed with a small sponge, applied on a forceps; at the tighter twisting together, one side of the wire is supported close to the palate by the forceps, that the soft part be not torn. If the cleft is near closing, the upper ligature is then cut off with a flat bent scissors, about four lines from its insertion, and the double end is twisted closer together with a pliers. The same manœuvre is then performed with the other sutures. Before the wires are finally twisted together, a small piece of sponge is pressed into the space between the sutures, in order to clear off the blood. The wires are then twisted more closely together, till the mucous membrane covers the rings, so that they are scarcely seen; the ends of the wire are then again shortened with the scissors, blunted with pliers, and turned away from the tongue, and the mouth is washed with cold water. This is my mode of treatment of clefts that are not very wide, and whose edges can be joined without much straining; but if the cleft is wide, so that the palate would be overstrained in twisting the wires, the union does not succeed; the stitches would either tear through at once, or ulcerate out in a few days, therefore:—

3. *Side incisions are necessary.* One side of the palate is pierced through with a scalpel, half an inch from the edge, and half an inch from the end of the wound; the velum is then cut through upwards, in a sawing manner, to the bony palate; another incision is made on the opposite side; the blood generally flows copiously, and the mouth must be washed frequently with cold water. The beneficial effect of these incisions shows itself immediately; the still strained palate hangs down lax, like a damp curtain, and the wounds on the sides appear like two oval clefts, which would admit two fingers. The painful and straining sensation which penetrates into the ears also ceases immediately, and the air passes freely in and out through them.

Side incisions are necessary before the entire closing of the cleft, in the higher and extreme degrees of this defect; and they especially give a possibility of closing after all the wires are put in, a little twisted together, and the original cleft lessened; but if on a second twisting of the wires there still remains a cleft of a finger's breadth,

one side is to be piereed, and the palate cut through as near the eheek as possible. A similar ineision is made on the other side, the twisting of wires is then to be eontinued until the eleft is elosed, and the ends of the wires are then to be eut off.

The patient must remain in bed, more in a sitting than a reeumbent posture, and the watching of a eareful assistant is very necessary; and the mouth must be rinsed from time to time to clear away the mueus, which eolleets in large quantities, and adheres to the ligatures, to assist which a piece of sponge fixed on a small stiek is of use. Only water and mucilaginous drinks should be given to the patient, but not lemonade, beeause it induees eoughing and oxidises the wire. On the third day the mouth may be washed with lukewarm water, or elder tea, and on the fourth, being assured of its eomplete adhesion, by probing it with a camel's hair pencil, one suture may be removed. The end of the wire is first turned to one side with a forceps, and a pieee of the ring whieh now appears eut out; it is then turned to the other side, and the double twisted end eut off, the remaining portion of the ring may be then removed. On the fifth and sixth days the other sutures may be taken out. Frequently the operation sueeeeds in uniting the entire eleft.

In smaller fissures of the soft palate, whieh only extend over half or a third of the lower part, two or three stitehes are usually suffieient: the shorter the eleft the narrower it is also, and the more probable the sueeess, than in large elefts. If the sutures eut through the edges, and the eleft opens, the wires must be removed, and no attempt made to unite them for some time. Sometimes the stitehes separate, so that only one remains. Here they must be speedily removed, exeept that one, for the support of a bridge; the breadth of a straw affords a greater probability of sueeess at a subsequent operation, because this bridge gains four-fold in breadth, through the eomplete healing of the remaining edges of the eleft; the preservation of union in the lower half is always fortunate, beeause there then remains only a short eleft with the borders approximated, whieh can afterwards be eompletely joined. If all the sutures have eut through, the operation is then indeed frustrated, but it does not lessen the probability of sueeess at a subsequent period; still it is advisable to defer any other operation for at least a year, because, till then, the sears have not become soft, nor the palate resumed its extensibility. I have often sueeeeded in an operation, whieh I had before tried unsueeessfully. In one instanee (a young lady), on whom three operations had been performed by an experienced hand, I succeeded eompletely in closing the eleft, with a leaden ligature, after other methods had failed.

As regards the artifieial side ineisions, they usually elose without any assistanee from art. There generally arises, in a few days, a granular eondition of the edges, that fills them up; and if this protrudes too mueh, it ean be redueed by toueling it with argenti nitratis.

II. Operation for partial or total Division of the Hard Palate, with even Edges. The eleft in the palate is in these eases usually large, and a side ineision after the insertion and partial twist-

ing of the sutures, is always necessary. The intention of this operation is to unite the palate, to lessen the cleft in the palate bone by degrees, and at last to close it, and, in the meantime, to put on an obturator, or plate with which the opening is covered.

In cases of very wide cleft in the hard palate, where there is only a rudiment of the soft pallate, the closing can only be effected by previously lessening the cleft of the pallate bone. The edge of each palate bone is pierced through with a strong, straight, three-cornered punch (*Pfriemen*), and a thick soft silver wire put through the opening, the ends of which are twisted together. The mucous membrane is divided near the place where the palate bones join the alveolar processes; a thin, smooth, concave chisel is then put to the bone, and it is cut through on both sides. The wires are then twisted again, till the edges of the bony cleft approach each other a little, or altogether; the first alone can be generally done. The ends of the wire are then cut off. The effect of the closer approximation of the edges of the cleft in the bone is immediately perceptible in the soft palate. The side slits in the bone, which are at first filled up with lint, close themselves by means of copious granulations, according to the usual process. The edges can sometimes be brought still closer by twisting the wire: by the application of the hot iron, or tincture of cantharides, which renders them purulent, and the bony spaces are lessened. When the space in the bone is either closed or diminished so much, that the cleft in the soft palate is considerably lessened; the sewing of the palate may then be undertaken, according to the directions already given, and side incisions made in the soft palate before the sutures are put in.

The rest of the operation, besides the exciting of the granulations on the borders of the bony cleft, consists in the removal of the mucous membrane, and pressing it into the slit; the loosened edge is then pierced with fine leaden sutures, and the place where the skin has been removed is filled up with dry lint.

The sutures, after a few days, generally break through, and the granulations that arise in the place where the skin has been taken off, prevent it from retracting altogether, and a part always remains in the cleft. This operation is to be continued from time to time until the cleft is removed.

III. The division and reuniting of the Soft Palate. The incision of the soft palate is a necessary commencement to any operation for the extirpation of the steatomatous swelling which adheres on each side of the palate. The palate is cleft exactly in the middle upwards from the uvula; the sides of the palate immediately retract, and the rest of the operation is performed according to the rules already given. If the patient is not exhausted, and everything is in readiness, the opening in the palate may be immediately reclosed, and the operation on it be continued in the manner already described. But if the passage is not free, on account of the thickness and swelling, as one of the chief objects of the operation must be to afford a free respiration, the opening in the palate must not be closed, because the extirpating and astringent means can be introduced through it, and the result watched; and the aperture is not to be

closed till it has succeeded in relieving the patient from his sufferings. When only a partial opening is necessary, about a finger's breadth is left undivided in the palate. I was successful in many operations of this sort.

Accidental wounds in the soft palate I have only met with in boys, and always from falling on a stick or a tin trumpet, which gets between their teeth, and in one case from falling on a drum-stick. These wounds are always ragged, the rag hanging downwards, and they are always in the soft palate, because it (the instrument) is stopped by the edge of the bone. In closing these I have mostly used a strong crooked needle, applied by means of a needle-holder, and it generally requires two or three thread sutures. Ferrier tells us of an instance where a man pierced through his palate with a stick, which he held between his teeth, having fallen in jumping over a ditch. He brought a thread through by means of a metal tube which was held by the teeth, and another through the nose. Not to be imitated.

IV. Treatment of the over-large Openings of the Soft Palate. Very small openings in the soft palate, that either remain after a partially successful stitching, or are caused by penetrating sores, may be closed by exciting inflammation in the borders. For this purpose concentrated tinct. of cantharides is the most effectual; lapis infernalis causes the loss of a layer of the organized mass, and the process of inflammation that follows produces an insufficient granulation, so that the hole generally increases in size. The concentrated acids recommended by many surgeons for exciting inflammations, only produce a superficial corrosion of the borders; nor does such a quick granulation follow their use as that of the cantharides.

If the opening is large and oval, and the palate soft, the edges are cut evenly to fit to each other, leaden sutures are then put through the edges with a small eared hook, and twisted as already mentioned. If the cleft remain, after the palate stitching, the approach of the edges is easier, and the closing more probable than where the edges have become callous through ulceration. If the oval opening extends over more than half the palate, and remains after the operation for cleft palate, the cure is performed with the same instruments, and in the same manner as at first, there being plenty of room. But where only a bridge-like union has taken place, the narrow slips are best left alone at the incision of the edges (a second time), because if the union does not succeed they will readily suppurate, and a point remaining open at this place can afterwards be easily closed by constant touching of the edges with the tincture of cantharides.

In cases of round holes in the soft palate, caused by abscesses, we should not attempt to cut them into an oval form, the more easily to unite their edges, because if that operation does not succeed, the hole remains a great deal larger. The skin round the edges only is to be removed, and one or two leaden wires passed through with the small hook; a crescentic incision is then made in the palate round one half of the hole, and the wires are twisted together. This side opening, is next filled with charpie. This secondary incision closes itself by granulations: and the original, either through the first intention, or by means of the granulating process. Sometimes it is advisable,

especially if the opening is large and oval, to make elliptical incisions on both sides, at short distances from the edges, and then close the sutures. I have oftentimes succeeded in this manner in closing holes in the palate. But none of these operations are so sure of succeeding the first time as in the case of an operation on hare-lip; only an improvement can be expected, and that often after great trouble and perseverance.

V. Management of Openings in the Hard Palate. Small holes in the hard palate are healed by granulation, which is produced by concentrated tincture of cantharides; a bundle of light charpie, tied together with a thick, strong thread, and moistened with the tincture, is inserted with a forceps into the opening which it is made to fill; and, that the patient may not swallow the charpie, it is fastened outside the mouth to the cheek, by the long thread and adhesive plaster. The lint is to be removed after it has remained in an hour.

If the opening is larger, and the edges covered with a thin skin, the borders are cut round within about a quarter, or half an inch of the edge; the skin is pushed away from the bone with a scraper, and the opening fastened by a suture. The side wounds are filled up with charpie, and treated according to the directions given in cases of cleft of the hard palate.

In cases of large round holes, immediate success need not be expected; here the patient ought to have made, by a clever dentist, a palate plate (*Gaumenplatte*) to cover the opening, but it should not project into it; it should be covered on the outside with a thin layer of gum elastic, and fastened by means of flat wire beams to the cheek teeth. The speech is by these means completely restored, but the closing of the opening need not be given up; the plate may be taken out every day, and the borders moistened with tincture of cantharides, and the plate replaced. In this manner I have frequently seen holes in the palate that a finger could be put through, closed up.

VI. Comparison of the different methods for stitching Soft Palates. The decided advantage of the method for stitching the palate, given in the foregoing, as well as the great number of successful cures produced by it, have procured it great extension; the incision of the border of the opening is best performed by fixing it with a small hook, and cutting it off from near the hook with a knife, in a sawing manner, upwards. To believe that it can be better fixed by a hooked forceps, is as great a mistake as to think that in an operation for strabismus, the globe can be easier fixed with a forceps than a hook.

The palate can bear squeezing together less with pincer-like instruments, which irritate, than with the small hook, which is scarcely felt, in bringing the mucous membrane together. This part in particular shows its insensibility on the removal of the edge with a knife. This latter instrument is not only preferable to the scissors, but it alone can be used, because the edges of the cleft cannot be reached with the scissors, on account of the soft palate descending obliquely downwards behind the root of the tongue. If the soft palate had an opposite direction, scissors would be the most appropriate instrument, because, after fixing the point of the uvula, the edge of the cleft could be easily

cut off with them, particularly as a moist glutinous border can be better cut off with a scissors than with a knife, but the uniting of the borders with leaden wire is of more importance than the mode of removing them. That a metal wire is not so suitable for the soft palate as a thread would appear evident, but the disadvantage is nothing in comparison with the advantage to be derived from it. If the insertion of the ligature through the border of the palate cleft succeeds, the closing of the fissure by twisting the wire together is perfectly easy, because it can be done by degrees, without the least inconvenience to the patient, or irritating the palate or tongue. The most difficult part of the operation in using the silk ligature is thereby avoided or converted into a very easy one, for if waxed threads are used, it is very difficult to tie the sutures equally tight; if you succeed in inserting one well, one of the others may be too tight, or too slack, one may cut through, and the others may not keep well together; and this cannot be remedied, but leaden wire can by degrees be twisted together, so that all the sutures are equally tight.

The side incisions are furthermore of particular importance. Only when the sides of the soft palate are pierced through is the operation worth anything, or any way secure, and while without them we can only hope to close small openings in the palate, with them we are able to cure the largest; because, by means of the wide openings of the side incisions, nature is forced to a regeneration by filling them up with granulations, so that the palate gains, what it was deficient in breadth. Roux had an early idea in case of clefts that extend also through the hard palate, and are, therefore, very wide, to loosen the soft palate from the bone by transverse cuts, in order to bring the edges closer to each other. The palate does, by these means, indeed, yield a little, but if one operation does not succeed the whole of the soft palate is disqualified for another, because the patches draw back and become shrivelled up. But if the operation, notwithstanding the side incisions, does not succeed, the cleft, by means of the filling up of the openings, becomes less, and gives greater probability of success afterwards. The first sets everything on one cast, the second is, at the least, half successful. Nor is the operation, as Roux recommended, made easier by the sutures being put in before the side incisions are made; the incision is, through them, made very difficult. Roux thought thereby to avoid the profuse hemorrhage, and the motion of the anterior and posterior parts of the palate, but I have never observed either. What other surgeons did to attain that object varies greatly, and there is much that is ingenious, both as regards the *manuelle* and the instruments. Inflammatory means were also recommended for reviving the edges, instead of cutting instruments; Von Gräfe recommended *kali causticum;* concentrated acid of brimstone, and spirits of salts (*concentrite Schwefel-und Salzsaure*). Abel advises tincture of cantharides; Doniges a hot iron (*Glüheisen*). The best known cutting instruments are Gräfe's first chisel-like instrument for paring the edges; afterwards he used the knife. Roux advises taking hold of the edge with a forceps or *Kornzange*, and cutting it off with a scissors; but I have always seen him do it with a straight button-

pointed fistula knife. Hruby uses the *Bakenzange** and a knife, and operates with them in the same manner as with the bone lip-holder in the operation for hare-lip. The palate needles are of different shapes; Gräfe first used those strongly bent, and three-cornered, afterwards the lancet-pointed. Roux employed them larger, and more bent; Alcock half oval, with the point bent inwards; Abel short, straight, and flat; Warnecke flat, with an ear below the point, and a whale-bone handle; Doniges used a hook needle with the handle bent backwards; Krimer's needle with a handle has a useless joint near the point; Lesenberg's pincer-shaped needle opens in the length, and closes by means of a sliding ring; Schwerelt's needle, in imitation of the former, closes by means of a spring between the branches, the ear is not oval, but three-cornered, and its neck thinner than at the point. The needles without handles are used by means of a holder. The most useless of all methods and instruments is the insertion of sutures through tubes which protrude from the mouth, as in the case of under-bound polypus in the throat. That it may not be imitated I here notice Villemur's method. He used a metal cylinder, and a wooden handle; an elastic needle is put into the channel, pushed through the cylinder with the handle, and bent into a half circle, when the edge of the palate is pierced through from within outwards, it is taken hold of with a forceps and is then drawn forward with a thread. I think Philips and Le Roi's ingenious apparatus too complicated; the newest instrument is the one invented by the dentist Hertig, which has a clincher provided on the top.

Art. 75.—*Ligature of the External Iliac Artery.* By Dr. Duncan.

(*Medical Times*, Aug. 9, 1845.)

A case in which this operation was successfully performed is recorded by Dr. Duncan in the *Northern Journal of Medicine*, March 1845. The patient was a man, 30 years of age, an American sailor, of a stout robust frame, and full habit of body. The disease commenced in consequence of making a violent effort while reefing a sail, and was of some months' duration, when he was admitted into the Royal Infirmary in Edinburgh, at which time the tumour was rapidly increasing in size. It measured six inches in length, and extended from about an inch above Poupart's ligament downwards. It was somewhat irregular in its surface, in consequence of some enlarged glands lying over it.

It felt pretty resisting at all points, except over its upper and anterior parts, where it was more compressible and most prominent. It pulsated, when grasped, in all directions; but the pulsations were felt most distinctly over its upper and anterior part. Over the same part an indistinct bellows murmur was heard, more particularly when the thigh was flexed on the abdomen. When the limb was extended so as to make the fascia tense, the tumour diminished somewhat in

* A form of forceps, with one side flat, and placed at right angles with the other, already known in this country.

size; and a certain diminution could likewise be effected by pressure, and likewise by compressing the abdominal aorta so as to suspend the pulsation in the swelling. The integuments over the tumour were free from discoloration, were perfectly lax, and could be moved freely over it. There was no œdema of the limbs, and no congestion of the superficial veins. After the requisite preliminary antiphlogistic treatment had been practised, the vessel was tied. The patient was laid resting rather on his left side, with the shoulders slightly elevated and the limb somewhat bent. An incision dividing the skin and superficial fascia was made, commencing about an inch above the middle of Poupart's ligament, and carried upwards for about three and a half inches, in such a direction as to be, when it passed the anterior superior spinous process, about an inch or more internal to it. It was slightly curved, the concavity being towards the mesial line. The aponeurotic expansions of the external oblique, the internal oblique, and transversalis, were divided to the same extent. The fascia transversalis was next divided to the requisite extent, the peritoneum carried inwards, and the vessel exposed.

The thin fascia covering the artery was divided to a very slight extent, and the needle carried around the artery, with its convexity towards the peritoneum, counter-pressure being made with the forefinger of the left hand. As a small filament of a nerve lay over the needle along with the artery, another needle was passed from within outwards, the first being retained to serve as a guide. The vessel was then compressed over the needle, and immediately the pulsation in the tumour ceased. The ligature was secured, one end being cut close to the knot. The securing the ligature was followed by immediate cessation of the pulsations, and collapse, to a certain extent, of the tumour. The wound was brought together by several points of suture, and lint, wetted with cold water, applied. The patient was laid in bed, with the limb slightly bent, and supported by pillows at the knee. The patient scarcely had a bad symptom afterwards, except that some excitement was caused by a crowd of students around his bed at the visit the day after the operation, which was removed by an opiate antimonial draught. He was also bled from the arm the same evening. The ligature came away on the twenty-second day.

Art. 76.—*Process for the radical Cure of Hernia by Injection.*

By Dr. Pancoast, of Philadelphia.

(*British and Foreign Medical Review*, July 1845.)

This process, as employed by the author, is as follows: The contents of the hernia must be completely returned into the cavity of the abdomen, for the process is only appropriate to cases of reducible hernia, and those which are not of large size. The apparatus required is a minute trocar and canula, a small graduated syringe, capable of containing a drachm of fluid, well fitted to the end of the canula, and a good fitting truss for the purpose of making compression. The patient is to be placed on his back; the viscera are then to be reduced, and

the truss applied over the external ring for the purpose of keeping them up, as well as to prevent the possibility of the small quantity of fluid thrown in from getting into the cavity of the abdomen. The surgeon then presses with the finger at the external ring, so as to displace the cord inwards, and bring the pulpy end of the finger on the spine of the pubis. At the outer side of the finger he now enters, with a drilling motion, the trocar and canula, till he feels the point strike the horizontal portion of the pubis just to the inner side of the spine of that bone. The point is then to be slightly retracted, and turned upwards or downwards; the instrument is then to be further introduced till the point moves freely in all directions, showing it to be fairly lodged in the cavity of the sac. The point of the instrument should now be turned into the inguinal canal, for the purpose of scarifying freely the inner surface of the upper part of the sac, as well as that just below the internal ring. The trocar is to be withdrawn, and the surgeon, again ascertaining that the canula has not been displaced from the cavity of the sac, throws in slowly and cautiously with the syringe, which should be held nearly vertical, half a drachm of Lugol's solution of iodine, or half a drachm of the tincture of cantharides, which should be lodged as nearly as may be at the orifice of the external ring. The canula is now to be removed, and the operation is completed. A compress should be laid above the upper margin of the external ring, pressed down firmly with the finger, and the truss slid down upon it. The patient is to be kept from changing his position during the application of the truss, and should be confined for a week or ten days to his bed, with his thighs and thorax flexed, keeping up steadily as much pressure with the truss as can be borne without increasing the pain, in order to prevent the viscera from descending and breaking up the new adhesions while they are yet in the forming state, or avoiding the risk of their becoming strangulated or being rendered irreducible by the lymph effused into the cavity of the sac.

The author has practised this operation in thirteen different cases, in but one of which was there any peritoneal soreness developed that excited the slightest apprehension, and in this case it subsided under the application of leeches and fomentations. In several of these cases a single operation appeared to be perfectly successful. In others, where the sac was larger, or the patient was less careful in keeping the truss steadily applied during the first week, or from a cautiousness in introducing in the first cases a more limited amount of fluid—the effect was merely to narrow the sac, rendering a repetition of the process necessary for the cure. Of the permanency of the cure, during several years after the operation, the author is unable to speak, most of the patients operated on being temporary residents of the Philadelphia Hospital, and passing, after a few months, beyond the reach of inquiry. While under the cognizance of the author, they were employed, without a truss, as labourers on the farm attached to the institution, and in no one of the cases, during this period, had the hernial tumour recurred. It would, however, be but a proper measure of precaution, to direct the truss to be worn subsequently for several months, in order to confirm the cure.

The greater number of these operations were performed by the author eight years ago, before classes of students at the Philadelphia Hospital, but as he was able to trace the future history of the cases but for a few months only, they were not deemed of sufficient importance for publication. Very recently, M. Velpeau has published a process almost precisely the same as that just described.

Art. 77.—*Fungus of the Inferior Maxilla successfully treated.* By D. Harrington, Esq. Philadelphia.

(*Condensed from the Dublin Medical Press*, Oct. 15, 1845.)

A young lady, in the enjoyment of excellent health, with no hereditary morbid tendency, was troubled in April 1842, with severe pain in the back teeth and lower maxillary bone on the left side. After a few days two teeth were extracted. A small spongy tumour of a livid hue soon appeared upon the surface of the lacerated gum, which was lanced, but afterwards increased in size, although no pain attended it. Its growth was extremely rapid, and it was cut down every two days for two weeks. After this powerful caustic was applied for two or three weeks without any beneficial effect. The fungus now nearly filled the mouth and almost precluded the possibility of swallowing. On the 25th of June, the fungus and a large portion of the *upper part* of the maxilla as far back as practicable, was removed by the knife. When the mouth was examined two weeks afterwards, the fungus had sprung up again nearly to its original size. After six or seven weeks the patient was on the eve of suffocation from the size and extension of the disease into the roof of the mouth, and down the throat.

Near the end of 1842, the young lady came under Mr. Harrington's care. The tumour presented the usual appearance of fungus hæmatodes in many places, and of ordinary cancer in others. Her general system sympathized, her face had the unhealthy hue of pale mahogany, the buccinator and temporal muscles, and the parotid gland were enormously enlarged, and the former so extremely rigid that the jaws could not be extended more than one third the usual distance. The remaining part of the diseased jaw on the left side had become distended on its upper surface, apparently to nearly three times its usual width, from near the symphysis back to its angle, and sent up the morbid and fetid growth, this being also attached to the lining membrane of the mouth, and to the constrictor muscles and sides of the tongue, and extending far into the pharynx. The posterior portions of the fungus were now removed by drawing it upwards by the aid of a wire loop, and cutting it away in pieces. The excision was performed by little and little day after day, for several weeks in succession, for the purpose of avoiding troublesome and dangerous hemorrhage, as from the situation it would have been impossible to use an actual or potential cautery with success if called for. During this treatment Mr. Harrington also employed galvanic electricity, by placing the positive pole within the mouth upon the fungus, and making the negative pole move constantly upon the exterior surface of the left side of the

cheek, during ten to fifteen minutes each hour throughout the day, for two or three weeks, with such intensity as the patient could conveniently sustain. Sarsaparilla was given in large quantities, and the left side of the face continually poulticed with wormwood softened by simmering it in vinegar, and powerful astringents were kept constantly in the mouth.

In about a month there was an apparent improvement both locally and generally, although, notwithstanding the incisions, from its rapid growth, the fungus was nearly of its original size, and its radicles had extended to, and attached themselves to new parts of the membrane of the mouth and tongue, and posteriorly near to the œsophagus. All the ordinary astringents had failed to be of much service, and several new ones had been tried, when at length *ashes* made from cast-off stems of tobacco, put into thin linen sacks, so formed as to cover, as far as possible, the upper surface of the fungus, and be held in place from hour to hour by the pressure of the upper teeth, were found to operate like a charm, exerting a powerful caustic action, which would continue for hours notwithstanding the flow of saliva. Two of these sacks were prepared for each night.

With the exception of the galvanising, these means were systematically attended to for three or four months, during which the fungus contracted its circumference by almost imperceptible degrees, when an opening was discovered quite through the remaining portion of the maxillary bone, near the angle; and a sinus extending from this opening, anteriorly, under the fungus, nearly to the symphysis. This opening was treated with astringent, and occasionally with acid injections, and sometimes filled with tobacco ashes.

At the end of twelve months the appearance of the patient offered the most conclusive evidence of a return to perfect health. But for a remaining enlargement of the left side of the lower maxilla, it could not be discovered that she had ever been afflicted.

The author, who has been in the habit of seeing numerous cases of fungus affecting the mouth, never met with one that appeared to be so little under control as this; he states it as probable, that the too confident reliance on the knife and powerful caustics, to the neglect of constitutional means, with the fatal hope of accomplishing much in a very short time, has been a common cause of failure in the treatment of such affections; and he thinks the tobacco ashes a valuable addition to our caustic remedies, especially in the management of excrescent affections of the mouth, vagina, rectum, &c., as it can be placed in a cavity, and made to operate for hours in succession upon a morbid surface, without at the same time injuring healthy parts. The sack for containing the ashes should be made of an impervious material in all its parts, except where intended to cover and act upon the diseased surface.

ART. 78.—*On the Position to be maintained in the Treatment of Disease of the Hip-joint in the young.* By ASTON KEY, Esq.

(*Medical Gazette*, Oct. 24, 1845.)

[The following is an abstract of a paper laid before the Physical Society of Guy's Hospital.]

The insidious progress of strumous disease of the hip-joint, the division of the disease into its several stages, and its usual termination in a greater or less degree of anchylosis of the joint, are, I presume, so well known that I shall forbear to enter minutely into the pathology of the disease; my object in these remarks is to point out the inconvenience of the deformity that is almost always found to attend convalescence, the causes which give rise to it, and the best mode of preventing it.

The first change usually observed in the relative length of the two limbs, is the temporary elongation or shortening of the one affected, according to the position which the patient maintains in the act of progression in the early stage of the disease, when it is characterized rather by a sense of weakness than actual pain. In the commencement of the affection, the patient throws the weight of the body instinctively upon the sound limb, and merely steadies or balances himself upon the unsound one. If the foot be carried forward and placed flat on the ground, the same side of the pelvis is carried forward and drops, giving a lengthened appearance to the limb. If, on the other hand, the unsound limb is not advanced much in progression, and the patient rests on his toes, the pelvis is carried upward on that side, and the limb appears to be shortened. Both these states are usually only temporary, and disappear if the patient is prevented from walking, and is made to lie down.

To those who have had much experience of this affection it is almost needless to remark, how rarely it is seen in the early stage, at a period when properly applied remedies can restore the joint to its previously healthy state. The insidious nature of the attack disposes both medical men and parents, alike unsuspicious of its real nature, to regard the affection as one merely of weakness, until unequivocal symptoms evince the commencing disorganization of the articular cavity.

The second stage of this disease is no longer, as the first has been, one of erythema of the synovial lining of the joint, but assumes a more active form of inflammation, extending to the more dense parts of the capsule and cartilage, and is attended with severe pain in rotation and abduction of the limb. Often, in the earliest part of the second stage, the limb will not admit of perfect extension, and by careful examination of the joint it may be discovered that the thigh is permanently flexed upon the pelvis. It is this state of the limb to which I wish to direct your attention, as fraught with the worst consequences to the patient.

This state of flexion of the femur on the pelvis usually takes place slowly and imperceptibly, but sometimes it is rapidly induced by a sudden attack of inflammation in a joint which has previously exhibited signs of disease in its mildest form. This is the worst form of

the disease, so far as deformity of the joint is concerned, for the intense pain which the patient experiences on the slightest movement of the limb, induces him to seek for ease in positions that add greatly to the distortion of the limb, by the obliquity given to the pelvis. The patient is seen lying usually on the sound side, with the affected limb drawn up to nearly a right angle with the pelvis; as the patient lies on his side, the affected limb appears to be three or four inches shorter than the other. When he is placed on the back, a position assumed with difficulty, and the bearings of the two patellæ and the spinous processes of the ilia are noticed, the former are seen to differ as much as from two to three inches, while only a difference of an inch is perceptible in the level of the latter. This would seem to show that the limb is actually shortened; such, however, is not the case, but by examination of the pelvis, it will be seen that the twist of the pelvis on the lumbar vertebræ, by carrying the affected joint backwards, is the cause of the great shortening of the limb.

During the stage of inflammation it is impossible to use any means for counteracting this distorted condition of the pelvis; and by the time that the patient is able to bear extension so as to restore the pelvis to its natural bearing, and to diminish the angle which the femur makes with it, the parts have become so fixed in their new position, as to render it difficult of alteration, and impossible in the majority of cases to restore them to their natural bearings. The consequence is, that when the patient is convalescent with a somewhat stiffened joint, the foot cannot be brought down to the ground, and a shoe with a sole of two inches is required to enable him to walk with the foot flat on the ground.

How is this state of things to be prevented? The only remedy for the evil is, in every case of hip-joint disease, to maintain the straight position as soon as the nature of the affection is ascertained, which is a position applicable in all stages of the disease.

In the early stage characterized by only a slight limping in the gait, or by an occasional slight pain in the knee or thigh, it possesses the advantage of maintaining the joint in a state of complete repose. The articulation being at rest, the muscles do not act, but remain in a passive state. On the contrary, when the limb is kept bent, with a pillow placed under the knee, a position usually resorted to in the early stage of the disease, the pelvis and thigh in a child are continually in motion; little or no pain is felt by the patient, and injunctions to preserve rest are made in vain. In the bent position, therefore, rest, one of the most important elements in treating a diseased joint, is not maintained, and the disease therefore fails often to be arrested. By a long splint applied along the outer side of the limb and made to extend from the toe to the axilla, entire rest is given to the joint, and absolute inaction of the muscles preserved. I believe, from what I have seen of this stage of the affection, that the arrest of the disease is greatly expedited, by the entire tranquillity which is obtained by the straight position in conjunction with the mercurial treatment.

The principal advantage of preserving the limb in a straight position is seen in the second stage of the disease, when under the united effects of inflammation and ulceration of the cartilage of the joint, the

tendency of the flexor muscles to contract induces such a degree of deformity in the lumbar vertebræ, pelvis, and hip-joint, as when once allowed to take place can never afterwards be wholly remedied. The position on the back is not irksome to the patient, nor painful, but is borne with cheerfulness and without complaint, because in the movements which the body undergoes, the diseased joint is kept at rest.

The course which abscess follows when suppuration takes place in the joint seems to be in some degree modified by the straight position. When the limb is allowed to bend upon the pelvis, matter is usually formed at the back part of the joint under the glutææ muscles, or at the side of the joint on the anterior margin of the glutæus medius. But when the straight position is observed, the suppurative action is inclined to the forepart of the joint, and the collection of fluid is formed on the outer edge of the iliacus muscle, on the side of the tensor vaginæ femoris. This course of the matter may be accidental; but in two cases, now in Guy's Hospital, suppuration has taken this course, one having burst and so discharged itself; and in the other case the abscess is making its way towards the surface in the same direction. I know of no inconvenience attending this course of the abscess; it is as easily managed, or perhaps more so, than when it occurs on the posterior aspect of the joint. But there is an advantage gained in the advanced stage of the disease, too important to be passed over; viz., the prevention of dislocation of the head of the bone on to the dorsum ilii; an occurrence though by no means frequent, yet found sometimes to take place; and greatly adding to the deformity and shortening of the limb. It can occur only in the flexed position of the limb, which thrusts the head of the bone backward against the capsular ligament and posterior part of the acetabulum; and these structures, together with the head of the bone, being partly destroyed by the ulcerative process, the head gradually escapes from the cotyloid cavity, and becomes looped upon the dorsum of the ilium.

The state of anchylosis in which this disease usually leaves the joint requires a concluding observation. In reply to any objection which might be raised to the utility of a limb anchylosed in a straight line with the body, the only inconvenience arising from it occurs in the sitting position, in which the patient, being unable to flex the limb sufficiently to sit on a chair in the usual manner, is compelled to drop the affected limb in a nearly perpendicular posture, and to sit with the pelvis resting on the side of the chair. This is the only evil attending the straight position, and is more than counterbalanced by the uniform length of the two limbs, and the absence of almost all lameness in the act of progression.

Care, however, should be taken to prevent the patient bearing too early upon the unsound limb during convalescence, when the straight position has been observed in the treatment of the case; for a sense of weakness, as in the first stage of the disease, induces him to raise the pelvis on that side, in order to prevent much weight being thrown upon the weak limb. The effect of this elevation of the ilium is to curve the lumbar vertebræ in a lateral direction, and this distortion becomes permanent.

SECT. IV. RARE SURGICAL CASES.

ART. 79.—*A Foreign Substance in the Ear for more than twenty years.*

By J. MAVION SIMS, M.D.

(*From the American Journal of the Medical Sciences*, April 1845.)

A negro man of the name of Lewis, applied to Dr. Sims on the 20th of August, 1843. On picking the ear the day previously, the pleasant titillation it produced caused him to run the instrument deeper than he had ever done before, and he was astonished to find it strike against something hard. He said that he had always been a little deaf in that ear, so much so that if the opposite one was closed, he could hardly hear at all. Whenever he caught cold, it seemed to settle there, producing an "itching in the bur of the ear," pain, swelling, and tenderness, which would last for a few days, and then subside, without any treatment. Now and then, however, he would be confined to his bed with fever, and very violent inflammation of the organ, to which he was in the habit of applying onion poultices for two or three days, or longer, before he could get relief, and then it was generally accompanied by the discharge of matter.

The last bad attack that he had was in 1834. The first was as far back as he could remember, when he was a very small boy. In his youth, the attacks were more violent, lasted longer, and visited him more frequently than at a later period. On examination Dr. Sims could easily discover something of a very black colour, filling up completely the bottom of the meatus. Exploring it with a probe caused no pain, unless it was pushed forcibly against it. It appeared to be round, and on trying to rotate it, by pushing against it laterally, it was perfectly impacted and quite immoveable. He attempted to pass a delicate pair of forceps, but it was so tight that the effort of forcing the blades between the foreign body and the parietes of the meatus caused so much pain that he had to desist. Moreover, the slipping of the forceps (which happened twice), might, he feared, have a tendency to drive it farther into the tympanum. Dr. Sims succeeded by syringing with warm water in ejecting it so far as to occupy that portion of the canal between the concha and the curvature, from which it was easily lifted out with the forceps. It was the stone of a cherry, which from the history of the case must have been in this secure retreat for more than *twenty years*.

It was very smoothly polished, and as black as charcoal, which colour it lost in a few days by exposure to the action of the atmosphere. After its removal, he complained of a feeling of coldness in the ear, and his hearing was painfully acute. On the 15th of Nov., 1844, Dr. Sims examined Lewis's ear, and discovered a large piece of indurated wax in it, which he loosened with a probe, and removed with the forceps. In its outward extremity was a beautiful cup or concavity, fitting most accurately the cherry-stone, which had been removed fifteen months before. A few days after this, the ear was found perfectly healthy in appearance, but there was evidently a difference between the dimensions of this and the opposite meatus.

The meatus from which the stone was extracted, appeared to swell out in its posterior wall into a pouch or sinus, a short distance from the tympanum.

This was the spot occupied so long by the cherry-stone, more recently by the inspissated cerumen, and, Dr. Sims remarks, "doubtless owed its peculiarity to the fact that the stone was introduced when he was a very young child, and the meatus thus accommodated itself to the size and shape of the intruder."

ART. 80.—*Case of Gun-shot Wound of the Chest; the thick linen patch, with which the Ball was enveloped, remaining in the left lung twenty-five years.* By M. H. HOUSTON, M.D. Wheeling, Virginia.

(*The American Journal of the Medical Sciences*, April, 1845.)

John M'Mullen slipped his gun through a crack in a fence preparatory to crossing it himself, and lodged its contents, consisting of a large ball, a thick linen patch, and some tow wadding, in his left side. They entered beneath the axilla, between the fifth and sixth ribs. The ball passed obliquely upwards and backwards, in the direction of the ribs, and was lodged at the side of the spinal column, immediately beneath the skin. An incision was made through the skin, and the ball with a piece of bone, supposed at the time to be a portion of one of the vertebræ extracted, and as much of the wadding as possible was taken out through the opening made by the entrance of the ball. There was considerable hemorrhage at the time from the wound, and also some expectoration of blood.

He recovered from the effects of the accident so far as to be able to attend to the ordinary duties of life, but was left with a cough of a peculiar character, and from time to time abscesses formed in the situation of the wound beneath the axilla, which were opened or burst of themselves, and continued discharging pus of a very fetid character for an indefinite time. Whilst the discharge continued, his cough was very much relieved, though, from its extreme offensiveness, he always desired the external opening to be closed as soon as possible. His general health suffered from the continued irritation in the lungs. He was dyspeptic and subject to bowel complaints, as flatulent colic, cholera, &c., which became more and more frequent. Under these attacks, when attended by Dr. Houston, he had violent paroxysms of cough, somewhat similar to hooping-cough, attended with considerable expectoration. The paroxysms continued without intermission until complete exhaustion took place, and when this happened, he expectorated the usual quantity of pus, with scarcely an effort, and the whole was over for a time. There was no regularity in the recurrence of the paroxysms, though they usually took place when he was in a recumbent position, or when he suddenly changed from one position to another. He ultimately sunk under an attack of cholera morbus at the age of 45 years, being twenty-five years from the period when he received the gun-shot wound.

The body was examined ten hours after death. The emaciation was extreme; the forms of the vertebræ being distinctly visible through

the abdominal parietes. This, in fact, had been the case for several days before death. The sternum being removed, the ribs on the left side were cut away as low down as the adhesions of the soft parts would permit. The upper portion of the lower lobe of the left lung was in a state of complete hepatization, and was attached to the ribs by very strong firm adhesions, to the distance of about two inches, surrounding the opening through which the ball had passed. These adhesions being divided as close as possible to the surface of the ribs, disclosed an opening in the lung, communicating externally with the one between the fifth and sixth ribs, and extending upwards and backwards through the substance of the lung in the direction of the spinal column. The fifth and sixth ribs were contracted together by firm bony union. The ball, in passing between them, had taken away about one half of the breadth of each rib, leaving a circular hole, after nature had performed her work, through which the end of the little finger could be passed without difficulty. Pursuing the dissection, the lung was found strongly adherent to the fifth and sixth ribs, at their junction with the spinal column, the place at which the ball had passed out. A portion of the sixth rib at this point had been carried away by the ball, and was mistaken at the time of the accident, for a portion of one of the vertebræ. The openings in this vicinity were all closed by a firm cicatrix. It will thus be seen that there existed a cavity in the substance of the lung, extending in the direction of the fifth and sixth ribs, closed posteriorly and superiorly, and communicating anteriorly and inferiorly, with the circular opening in the ribs. Upon introducing the finger into this cavity, a foreign body of some kind was discovered. The lung being removed, and the cavity laid open, it was ascertained to be a smooth firm substance, somewhat in the shape of a silk-worm, though of what it consisted none of those present were able at first to determine. Being soaked in water, it was gradually spread out, and proved to be a piece of coarse home-made linen cloth, evidently the patch of the bullet, about two inches and a half in length by two inches in width, which had been rolled into the shape in which it was found by the action of the lung. The linen retained the marks of burnt powder on its edges, and was in a state of the most perfect preservation. The cavity, which contained this roll of cloth, was lined with a smooth but firm membrane, and had opening into it two or three small bronchial tubes, one of which was dilated at its mouth very much into the shape of a funnel. This dilation was no doubt caused by the end of the roll of linen becoming engaged in it, and its presence there producing and keeping up irritation of the bronchus, will satisfactorily account for the violent and long-continued paroxysms of cough. The natural effect of the action of the lung would be to keep it in its situation until relaxation from exhaustion took place, when it would be disengaged by the mere force of gravity. This will also account for the absence of expectoration during the continuance of the paroxysms, and the facility with which it was effected as soon as the paroxysm was over. As long as the linen was driven by the action of the lung into the funnel-shaped opening, it acted as a stopper, and prevented the entrance of

the pus; as soon, however, as it was removed, the pus flowed of its own accord into the bronchial tube, and was expectorated with the slightest exertion.

It would be idle to speculate on the facility with which this piece of linen might have been removed from its situation in the lung. To have done this, it was necessary in the first place to ascertain its presence, and, although the case was examined by some of the most eminent men of the profession, in different parts of the country, I have yet to learn that the presence of a foreign body in the lung was suspected by any one of them. The stethoscope disclosed nothing that might not have been reasonably anticipated from the general history of the case. The interesting *fact* is established by this case, that a foreign body may occupy a situation in the substance of the lung during a period of twenty-five years, without causing death. The right lung and the remaining portions of the left were in a healthy state. The stomach was enormously distended, and its mucous coat very much thickened and corrugated. Its general appearance was very similar to that of the skin of the face. With the exception of a small patch of inflammation near the pylorus, it presented no indications of recent disease. The small intestines were healthy throughout their whole extent. The mucous membrane of the colon was thickened and corrugated in a manner similar to that of the stomach; and exhibited along its entire track, innumerable small ulcers, surrounded by blue elevated edges. No indications of recent inflammation. The other organs presented nothing abnormal.

ART. 81.—*Entero-vesical Fistula.* By Mr. MACLURE, Surgeon.

(*Collectanea Medico-Chirurgica*, 1845.)

Mr. Maclure describes the following interesting case. A female, aged 73, the mother of a large family, who had always enjoyed excellent health, had a non-malignant tumour formed in the parietes of the abdomen, about midway between the anterior superior spinous process of the left ileum and the pubis. It was removed by Mr. Keate; did well at first; but shortly after the operation erysipelas came on, more in the centre of the abdomen and to the right side. This was attended with considerable constitutional disturbance, and ended in sloughing of the integuments to a large extent, but the sloughing did not encroach upon the wound, which cicatrized perfectly. An extensive sore remained after the sloughing process, but no fears were entertained of a fatal issue.

Mr. Maclure was called in and found that the following symptoms had supervened. Great pain in the region of the bladder and rectum, attended with a constant and invincible desire to make water; painful tenesmus with procidentia ani; great debility; and an evacuation of what appeared to consist of fæces, with a small admixture of urine, and were supposed to be discharged at the same time from their respective outlets.

Sedative remedies were administered with very indifferent success. The irrepressible desire to make water was but in the slightest degree

abated, and this only through the anodyne effects of large doses of acetate of morphia. Three days afterwards, the catheter being introduced, it was discovered that the mixture of fæces and urine came from the bladder, and "such a blast of *flatus* accompanied it as almost extinguished the candle which a servant was holding at some distance." The same tranquillizing treatment was pursued, with nourishment to support the patient's strength. The catheter was used daily, and the removal of the contents of the bladder gave great temporary relief; the bladder was also washed out on these occasions with warm water. Half a pint of decoction of pariera brava, combined with tincture of hyoscyamus, was administered daily. The rectum was washed out by means of enemata. Poppy-head fomentations, suppositories of soap and opium, muriate of morphia, to the extent of four grains a day, were found very partially and inadequately to alleviate the dreadful sufferings which the patient endured. After seventeen days, much less feculent matter than previously, found its way into the bladder, without any diminution of suffering; it also became more of a brownish and glairy nature, streaked white with what was believed to be phosphate of lime. Coma occurred, and about twenty-four hours afterwards, and twenty-seven days from the commencement of the fatal symptoms the patient sunk. No post-mortem inspection could be obtained. It was conjectured that the ulcerated communication existed somewhere about the sigmoid flexure of the colon, and a corresponding part of the bladder.

ART. 82.—*Utero-vesical Fistula.* By ISAAC HARRISON, Esq. Reading.

(*Condensed from the Provincial Med. and Sur. Journal*, June 11.)

Mrs. H., aged 41, after a protracted labour and delivery of her seventh child, had retention of urine for which the catheter was employed. On the thirteenth day she felt something "give," and the urine flowed away. During five years she led a most miserable existence from the continual dribbling of the urine; her medical attendants could discover no fistulous passage, and treated the case as debility of the bladder.

In this state she accidentally came under Mr. Harrison's observation. By the aid of the speculum he ascertained that the urine issued from the os uteri. On exploring the bladder with a small catheter, the concavity downwards, and a finger in the os uteri, the catheter and the finger came in contact. There was an opening sufficiently large to admit a small catheter between the fundus of the bladder and the uterus about three quarters of an inch within the cervix.

The author resolved to attempt to close the fistula by exciting irritation. For this purpose, on the 14th of July 1841, a Brodie's cathether, covered with a long piece of twine, was introduced into the bladder, concavity downwards; and being guided by a finger within the os uteri, the fistula was easily found, the instrument was passed through into the vagina, the thread seized, and the catheter withdrawn. Thus, one end of the twine hung from the urethra, the other from the vagina. To the urethral extremity was tied a skein

of six threads of glover's silk, oiled, and then by drawing at the vaginal extremity it was brought through the fistula, and the urethral and vaginal ends tied together.

From the time of the introduction of the silk no dribbling took place, except when using some extraordinary bodily exertion. On the fourth day irritation beginning, the first thread was withdrawn. On the fifth the second; on the sixth the third; on the tenth the fourth; and on the seventeenth the fifth; leaving only one remaining. During this time considerable irritability of the bladder existed, so that its contents were obliged to be evacuated every hour. During the three subsequent months the size of the silk was changed three times, so that at last it was reduced to the smallest size compatible with sufficient strength and durability. On the 22d of October the last thread was withdrawn, at a favorable opportunity, just after the catamenia, when it might be imagined that, if ever, the edges of the orifice would be in a condition to close. In twenty-five days the dribbling was as bad as ever.

Four large threads were again introduced, and in twenty-eight days they were reduced to one, the relief being as complete as on the former occasion. The patient has been in the same comfortable state for four years, she changes the thread herself once in three or four weeks, not a drop of urine has escaped the last three years, and she is capable of performing the usual domestic duties. The thread requires to be drawn down once a day to cleanse it from sabulous matter.

One circumstance not easily explained is, that at each menstrual period the urine is voided highly charged with the catamenial fluid. Mr. Harrison remarks that this cannot depend on the situation of the opening, for the patient is able to retain the contents of the bladder for eight or ten hours, and that it must depend therefore either on the form of the opening, or on some evolution of the lining membrane of the uterus from which it is secreted into the bladder.

Art. 83.—*Fungoid Growths in the Cavity of the Mouth.*

By Dr. Bloch, of Warde.

A girl had not less than 140 excrescences in the cavity of the mouth. They were mostly of the size of a flattened pea, some round, many grown together, the majority especially the smaller pedunculated, others with a broad basis, all firm and hard, and in colour the same as the mucous membrane of the mouth. They were mostly situated on the upper surface of the tongue, and seemed to be enlarged *papillæ fungiformes*. Many of these were larger, and of lighter colour than the others, and all were isolated and pedunculated. Several were situated on the edge of the tongue, on the tonsils and uvula, and others on the inner surface of the cheeks, from the coronoid process of the under jaw to the angle of the mouth on both sides. The largest and most developed were found in the left corner of the mouth. No wounds could be found on the gums or palate. As the patient experienced no inconvenience, they had only been noticed within a

short time; no cause for their presence could be discovered. Bloch cut away most of the excrescences with a curved scissors, and applied nitrate of silver to the cut surfaces, as well as to the small tumours; the section was unaccompanied by bleeding, and gave little pain. On examination, the morbid growths appeared to consist of thickened cellular tissue, and the peduncles were furnished with a few small vessels.

Oppen. Zeits. fur die Gez. Mēdicine, and *Lancet*, Aug. 16, 1845.

ART. 84.—*Compound Fracture of the Os Frontis in a Child* 18 *months old, three pieces of bone remaining in the Cerebrum during four months.—Recovery.* By THOMAS INMAN, M.D.

(*Report of the Liverpool Pathological Society. Edinburgh Medical and Surgical Journal*, Oct. 1845.)

Isabella Oliver, aged 18 months, was brought to the infirmary in her mother's arms, having just received a kick from a horse. An extensive fracture of the right frontal bone was discovered, with great loss of substance. The little finger was passed through the opening into the brain, which was extensively lacerated, but no fragment could be detected. The child did not appear to suffer from the injury. A little lint, dipped in cold water, was laid over the wound, with directions to the mother to keep it constantly wet, &c.

In a few days the brain was seen to be superficially in a sloughing condition; but no bad symptoms appeared. Six weeks afterwards the slough separated, excepting at one spot, where it adhered pertinaciously, evidently having very deep connexions. The rest of the exposed surface was covered by healthy florid granulations. Four months after the injury four pieces of bone were found in the wound, and readily extracted; they were all rough and dry, as if they had been dead a long time, of different sizes, but in all sufficient to cover a half-crown piece.

In six days from this time the wound had cicatrized completely. The union, however, was membranous only, and the brain could be distinctly seen to pulsate through it. Considerable pressure could be borne at this part without producing any particular effect.

No untoward symptoms occurred at any time after the injury, if we except a slight debility while the slough was separating, indicated by the weakness of the cry. No other treatment was adopted than an occasional powder, and the continuance of water dressing.

ART. 85.—*Ligature of the external Iliac Artery for a circumscribed false Aneurism from the division of a superficial branch of the femoral artery by a pistol shot; a suspicion being entertained that the femoral trunk was wounded.* By Mr. LISTON.

(*Condensed from the Reports and Commentaries in the Lancet, Medical Times, &c. By Dr. Potter and others.*)

On the evening of the 20th of May, Mr. Seton received a wound from a pistol ball, which entering the upper part of the right thigh, a

little above and in front of the great trochanter, and crossing the abdomen, passed out about the middle of the fold of the left groin.

No surgeon was present, but the non-medical witnesses of the event, describe the hemorrhage which occurred as rapid, the blood being florid, in large quantity, and issuing *per saltum* from both wounds; and as rising when uncontrolled in a jet to the height of two or three feet from the wound in the right hip. Attempts were made to arrest the hemorrhage by pressure over the wounds, but the patient fainted, and the hemorrhage ceased.

When first seen by a surgeon, the patient appeared almost lifeless, but was restored by proper measures. The following day the temperature of the surface became more natural, the pulse increasing in rapidity and somewhat in strength. The track of the ball was marked by an elevated ridge, from one opening to the other, and some ecchymosis of the skin extended from this line over the lower part of the abdomen and scrotum. The patient suffered great pain in the groin and right lower limb generally, with a sensation of numbness of the front of the thigh, and partial loss of power over the muscles of that part of the limb. Subsequently, the application of iced water and bladders of ice to the right groin gave some relief.

In the course of the next few days little change occurred, but on the seventh day after the receipt of the injury (May 27th), the swelling over the track of the ball appeared more evident in the right groin, and was here observed for the first time to pulsate with each stroke of the heart. During the next two days, the swelling increased, although not very rapidly, and the pulsation became stronger.

On the evening of the tenth day (May 30th), Mr. Liston first saw the case. The patient's skin was blanched and waxy, and his pulse rather quick and feeble. He suffered at times severe pain in the limb, but there was no marked expression of anxiety in his countenance or manner, he felt his strength improving, and was hopeful as to the final result. The wound on the right hip was circular, filled with a dry depressed slough, with a narrow faint blush of redness round its margin; that in the left groin was a jagged line already partly closed by a thin cicatrix. There was extensive ecchymosis of the skin in both groins, and over the pubes, scrotum, and upper part of the right thigh.

In the right groin there was a large, oval, visibly pulsating tumour, extending transversely from about an inch and a half on the inner side of the anterior superior spinous process, to about opposite the linea alba; its lower margin projecting slightly over Poupart's ligament into the upper and inner part of the thigh. On handling, it appeared elastic but firm, very slightly tender, and not capable of any perceptible diminution in bulk by pressure. The pulsation was distinct in every part, and equally evident whether the fingers were pressed directly backwards, or whether they were placed at its upper and lower margins, and pressed towards the base of the tumour in a direction transversely to its long axis, the parts being for the time relaxed. The femoral artery was slightly covered by the swelling, and its pulsations were obscure in the upper third of the thigh. No pressure on this artery or on the abdominal aorta arrested the pulsation in the

tumour, and pressure in the former situation was attended with severe pain. It was inferred that the tumour was a circumscribed false aneurism.

The question would now arise: Has the *femoral* artery been wounded?

If the wound from the pistol-ball had injured the femoral artery, so as to give rise to an instantaneous, rapid, and severe hemorrhage, there is the highest probability that Mr. Seton would have died on the field:—

A pulsation being felt on the distal side of the tumour was against there being a wound of any consequence in the femoral artery:—

For several days there had been no return of hemorrhage and no tumour was visible, which could scarcely have been the case if the femoral or any important artery was wounded. If the wound throughout its whole length were subcutaneous, the femoral artery would in all probability be uninjured. The reports do not state that this circumstance was made out during life, although it turned out to be the case, on post-mortem examination.

The presumption was accordingly very strong, if indeed the certainty was not established, that the injured artery could not be the femoral.

But the following circumstances presented themselves to form a *prognosis*, from which it was inferred that the patient was in great if not imminent peril: The blood in the tumour appeared fluid, the tumour pulsated very forcibly, the circulation was gradually being restored, and the effusion if left to itself would probably increase, as it had since its first appearance, although there was some doubt about this during the latter period;—"some thought it had been enlarged during the preceding night." An additional quantity of blood might be poured out at any moment. When the sloughs separated, renewed hemorrhage might occur, and the further loss of blood would in all probability prove fatal; or, the patient, weakened by its loss, would have to bear up against profuse suppuration after the closure of the injured vessel by ligature or otherwise.

On the question of *treatment*, pressure either with or without the application of cold, was looked upon as quite insufficient to arrest even the further increase of the effusion, inasmuch as the bleeding vessel could not be more directly pressed upon than any other part, and as from the very form of the swelling, the compressing force would tend to drive the blood already extravasated further under the fascia of the abdomen.

The first indication, therefore, which presented itself was,—to lay open the tumour, search for the wounded vessel, and tie it above and below the wounded point, but it was thought practicably to be unwarrantable; because

1. Supposing the operator able to command the circulation on the proximal side, it must still be attended with a dangerous loss of blood.

2. As the supply of blood to the tumour could not, in this instance, be effectually interrupted by pressure on any large arterial trunk, the hemorrhage, in searching for the wounded vessel, would probably be unusually great.

3. Supposing that the common femoral artery should be found wounded, or one of its branches divided close to the main trunk, so as to render it necessary to apply two ligatures to the common femoral itself, the chances of the recurrence of secondary hemorrhage on the separation of the ligatures would be very great; considering the frequency with which this occurs in cases where the common femoral is secured by a single ligature, and in the most favorable position that the operator can select.

It was now, therefore, a question whether the external iliac artery should be tied. Against the performance of so formidable an operation the following reasons existed: 1. The patient's constitution; he was very fat, particularly considering his age; had lived very freely, taken little exercise for years, was delicate and impressible, and when indisposed was always observed to be easily lowered by treatment. 2. The recent shock which the constitution had received; two such shocks within nine days must almost inevitably prove fatal. 3. The character of the operation; the extent of the wound would be a source of immense constitutional irritation in such a subject; the peritonitis which would supervene must be almost inevitably fatal,—the danger of mortification of the limb,—the unsuccessful result of large operations generally.

On the other hand, it was supposed that mortification of the limb was less likely to occur from there being little pressure on the femoral vein, and that the chances of peritonitis and mortification taken together were less unfavorable than the chances of immediate and secondary hemorrhage attaching to the other operation. It was accordingly determined to tie the external iliac.

As to the time of performing the operation, the following circumstances existed in favour of delay. The further effusion of blood might never take place; if it did take place, it would not necessarily destroy life. No circumstance existed at the moment urgently demanding an operation. The delay would introduce no new element of danger, nature would either show a tendency to close the wound, or new symptoms would exhibit themselves; the patient might live a very considerable time without any interference, and an aneurism of this size and superficial situation might vanish without causing death.

The surgeons in attendance agreed, on the other hand, that any increase in the quantity or superficial extent of the extravasation must add materially to the difficulties of operating. They had previously agreed that an operation was necessary, and as the patient had rallied tolerably well, they considered that the sooner the supply of blood to the tumour was cut off by ligature the better chance the patient would have of life.

Operation by Mr. Liston the eleventh day after the injury. (May 31, nine, a.m.) The patient having been placed on a table in a good light, an incision was made through the skin, commencing just above Poupart's ligament, rather nearer its outer than its inner termination, and continued upwards and a little outwards. A layer of from one and a half to two inches of subcutaneous fat, and the external oblique muscle, having been cut through by successive strokes of the scalpel, another thick layer of yellow lobular fat projected into the incision,

hiding completely the internal oblique muscle, and looking at first somewhat like the omentum. This layer of fat, the internal oblique and the transversalis muscle, were then cut through cautiously, and to a limited extent, until the thin transversalis fascia just appeared. This was readily torn through, and the finger being introduced beneath, it was lastly divided to the full extent of the external incision by means of a curved probe-ended bistoury carried along the finger as on a director. The sub-peritoneal cellular membrane thus exposed, proved to be so loaded with adipose tissue, and consequently so firm and solid, that it was easily separated from the face of the fascia iliaca; and for the same reason, the peritoneum and intestines were more readily and completcty held aside than is usual in this operation. At the bottom of the deep wound thus formed was seen, first, the iliacus muscle under the fascia, and then the psoas and the genito-crural nerve; but at first nothing was visible of the external iliac artery, nor could it be felt in its usual situation, close against the margin of the psoas. The fact was, that the vessel, adhering more closely to the sub-peritoneal cellular tissue than to the other parts, was drawn with it slightly out of its course; and turning the ball of the finger inwards towards the cavity instead of towards the brim of the pelvis, its pulsations were felt distinctly. The external iliac was now a little more exposed, a common aneurism needle passed under it, and a strong twisted silk ligature carried round; but before this was tied, it was ascertained that when the vessel was pressed against the curve of the needle, the pulsation in the tumour was eomplctely arrested. No return of pulsation took place in the tumour, but symptoms of peritonitis rapidly set it, and the patient died about thirty-five hours after the operation.

On post-mortem examination, it was found that the ball had passed altogether in the subcutaneous fat; that it did not pierce the fascia lata; and that thc only vessel wounded, and forming the false aneurism, was a superficial branch of the femoral artery, which was divided close under Poupart's ligament, and nearly an inch from the main trunk, its divided extremity being perfectly open. The blood effused and forming the main tumour was coagulated (forty-threc hours after death). There werc several pints of sero-purulent fluid in the cavity of the peritoneum, and several "patches of inflammation" on parts of that membranc covering the large and small intestines, and the parietes of the abdomen near the wound made for the application of the ligature. This wound had a sloughy appearance, and was filled with a thin purulent dischargc. The artery had been tied about the middle of its course, and was but little separated from surrounding parts. There was no coagulum in it, either above or below the ligature. The vein was sound and healthy. There was a small abscess in the left groin, and a collection of blood in the cavity of the tunica vaginalis. The cord was not divided, but blood was extravasated in patches along its course.

PART III.

MIDWIFERY, AND DISEASES OF WOMEN AND CHILDREN.

SECT. I. MIDWIFERY, AND DISEASES OF WOMEN.

ART. 86.—*On Rupture of Ovarian Cysts.* By M. CAMUS.

(*Gazette Médicale*, March 1, 1845.)

[THE rupture of an ovarian cyst into the abdomen without death supervening, is a fact, which though not new in the annals of science, is still one sufficiently interesting. The following are the principal circumstances of the case, related by M. Camus to the Medical Society of Paris.]

A woman, aged 85, had laboured under an ovarian cyst for the last two years and a half,—purgatives, diuretics, ioduret of potassium, and compression, had alike failed in procuring any benefit. The patient was on the whole, however, in a tolerably comfortable state, till the 17th of January 1844, when the tumour became the seat of severe pain, accompanied with extreme lassitude, shivering, and slight fever. [A bleeding prescribed.]

On the 18th, the patient was suddenly seized with severe pain in the abdomen, prolonged shivering, nausea, vomiting, and great restlessness; pulse 126, small and hard, colic, face anxious as in peritonitis.

On examining the abdomen, M. Camus discovered to his surprise, that *its shape was completely altered;* instead of projecting, it was flattened at the centre, but the abdomen had gained in size what it had lost in prominence. Percussion yielded a clear sound in the median line in the neighbourhood of the umbilicus, where formerly a dull sound had been heard. At the sides, on the other hand, the clear sound was replaced by a dull one. The undulation of fluid from one side to the other had never been before so perceptible. These remarkable changes were evidently due to rupture of the cyst, and the consequent effusion of the fluid it contains, into the peritoneal cavity. The encysted dropsy had become converted into a true ascites. Notwithstanding the fears to which this accident gave rise, the peritonitis terminated happily in the course of two or three days.

On the 22d and 23d, the urine, hitherto scanty, became clear and limpid, and in such quantity as to fill the vessel five times in the twenty-four hours. During this time, the abdomen also lost from two to three inches daily in circumference, and became more and more pliant.

On the 1st February, twelve days after the rupture, the urine still continuing to be passed in abundance, the existence of fluid in the peritoneal cavity could no longer be discovered. The abdomen was reduced to a size to which the patient had long been a stranger, and all symptoms of inflammation had long disappeared.

Notwithstanding the employment of regular pressure and diuretics, the fluid soon again accumulated, and the abdomen acquired a size even greater than formerly. On the 17th July, the patient was seized with sudden pain, and an extraordinary movement in the abdomen, which phenomena being almost immediately followed by sinking of the median line and enlargement of the sides, indicated that effusion of fluid had a second time taken place into the peritoneum. The same series of phenomena recurred as formerly, but they were of less severity. The quantity of urine was also less. The fluid was again, however, entirely absorbed, although somewhat more slowly.

At the end of four months and a half the cyst had again filled; a third rupture took place; there were the same symptoms, but with diminished severity. The urinary crisis was also less abundant, although the absorption was accomplished in ten days.

[M. Camus was naturally led by the preceding case to seek for analogous ones among authors, and, from a comparison of these, he has deduced some highly interesting conclusions. As regards the termination,—the patients in whom rupture of an ovarian cyst took place into the peritoneum, may be classed under four categories:]

1. Into those in whom death occurred immediately, or within a few days of the first rupture. These cases are rather numerous,—but in most, dissection disclosed that the cyst, previous to the rupture, had contained a purulent fluid more or less altered, and not the serum usually met with. This circumstance is sufficient to account for the fatal termination of the disease.

2. Into others, who, after one or more ruptures, remain affected with ascites. Morgagni relates several cases of this kind, some observed by himself, others by Basius, Guterman, and Schecher. It is not, however, demonstrated that in these cases the ascites did not originate at the same time with the ovarian cyst, and previous to the eruption of the latter.

3. It is to be observed, that most patients who have survived one or two ruptures, were cured only temporarily, and at last sank under the progressive effects of the encysted dropsy. Maurieeau (*Obs.* 49), Morgagni, Boyer (*Maladies Chirur.*), and Btuff (*Thesis* by Cazeau, 1844), quote examples terminating in this way, which are interesting, as they exhibit a large number of ruptures and peritoneal effusions, followed by absorption of the liquid, without any serious alteration of the general health.

4. There was one patient who, after several ruptures, was definitely cured of the encysted dropsy. This *unique* case is given by M. Bonfils,

and was the subject of a report to the Academy of Medicine, by M. A. Bérard.

M. Camus then puts the following question: Can art do anything towards rendering the rupture innocuous, and thereby produce a cure of these ovarian cysts? As there is no hope of obtaining a cure, and consequently no end to be served by inducing rupture, provided the cyst contains pus instead of serum, this point ought first to be ascertained by a previous puncture. With this important exception, M. Camus repeats the advice given by M. Bonfils, who recommends, after puncture of the cyst, and previous to withdrawing the canula, to move the instrument somewhat briskly in different directions, so as to contuse and even tear the wound made in the walls of the cyst, and thereby prevent the adhesion of its edges, and so to allow a continual escape of fluid from the interior of the cyst into the peritoneal cavity, where it will be absorbed. But can the successful results said to be obtained by M. Bonfils' method be thus explained? Ought we not rather to attribute them, with Bérard, to the effects of adhesive inflammation—induced by the movements of the instrument—producing obliteration of the cavity. M. Camus admits that the explanation of M. Bérard is the more logical. But he, at the same time, remarks that in the case of rupture, the fluid is not evacuated as after puncture, but remains in the abdomen, in contact with the opening into the cyst, and that thus its pressure must be greatly adverse to the work of adhesion, on which the radical cure depends.

In any case, however, the innocuousness of these ruptures, and the reabsorption of the effused fluid, are two facts worthy of the fullest consideration. They ought henceforth to be taken into account in the history of these affections, and would authorize us more than ever to have recourse to a mode of cure more certain and less dangerous than any we yet possess for this formidable species of dropsy, we mean subcutaneous incision of ovarian cysts; or, according to circumstances, the simple puncture, operations already several times proposed by the author of this method.

ART. 87.—*On the comparative Merits of Incision and the Ligature in Uterine Polypus.* By SAMUEL ASHWELL, M.D., &c.*

The author observes, that "in England the ligature has always had a decided preference, and no better proof of its safety and utility can be adduced than the general success attending its application. If a polypus can be noosed beyond its most bulbous part, in nineteen out of twenty cases the hemorrhage will be restrained; and more conclusive testimony can scarcely be adduced, than that which supports this statement. From the imminent danger of the disease, its bleedings, the patient is almost invariably and at once secured, by the successful application of the ligature. There may be difficulties in fixing it, and

* Practical Treatise on Diseases peculiar to Women. London, 8vo.

no doubt death has occasionally followed its use. But excision cannot always be practised, and the cases where it is difficult to apply the noose, are the very examples in which we should be afraid or unable to excise. When excessive pain, inflammation, gangrene, and death have occurred, the ligature must have been incautiously used, or too long continued; although even in these instances, the evils might have been averted by timely removal. Not so, however, with excision. How much blood may be lost in the division of the pedicle, or how great the difficulty of stopping the hemorrhage may be, can only be conjectured prior to the severing of the growth. The hazard must at all events be encountered.

"Though preferring the ligature as the easiest and most universally applicable in practice, I fully admit the value of excision, and especially of excision below the ligature. Many of the disadvantages attendant on the use of the ligature are avoided, when a polypus is excised. It is quickly done, and without pain or injury to the neighbouring structures. But is it quite certain that we can always guard against the risk of excessive hemorrhage? That there are many polypi which may be so removed, does not admit of doubt. Dupuytren is said to have cut away 200 polypi by the knife, and hemorrhage only occurred twice. Velpeau's experience is favorable to excision, and Sir B. Brodie has been fortunate in similar operations. Many other names might be mentioned. I have also removed several polypi by excision. On one occasion the hemorrhage required the plug, in this case little or no blood was lost. But if the polypus be large and of hard structure—if it be of the white kind, which has scarcely any blood-vessels—if there has been but slight hemorrhage during its growth—if there be no pulsation in the stalk—excision will be the preferable practice. Or if the operator incline to be cautious, he may noose it first, and either immediately, or a few hours afterwards, excise below the ligature. If the polypus be still partly within the uterus, and the hemorrhages are endangering life, the ligature may be employed; but here it would be impossible, at least with safety and without dragging down the uterus, to use the knife. In the operation by excision the bistoury is used, and for applying the ligature the double canula of Neissen, as improved by Gooch, and which has been rendered perfect by the addition of a silver windlass."

Art. 88.—*On Rheumatism of the Uterus.* By Isaac Taylor, M.D., New York.

(*American Journal of the Medical Sciences*, July 1845.)

[Rheumatism of the internal generative organs of the female appears to have been known as long back as the year 1685, when Dr. Charlton, of London, published an essay entitled, "*Inquisitio de causis Catameniorum, et Uteri Rheumatismo.*" Since which time it has been noticed by several writers both in this and foreign countries. The latest authors who make mention of it are M. Chereau (*Mémoire pour servir à l'étude des Maladies des Ovaires*), and Dr. Rigby (Reports on the

Diseases of Females, Med. Times, 1844-45), who traces the connexion between rheumatic affection of the ovaries and dysmenorrhœa. The disease appears most commonly to attack females towards the close of gestation, but may also appear in the unimpregnated condition. In the former case the intensity of the pain commonly gives rise to the suspicion that labour is far advanced, and from its similarity to true labour-pains can only be recognized as rheumatic by examination per vaginam. The diagnosis of the affection is thus laid down by the author:]

From *neuralgia* of the uterus it is distinguished by the fact that the former is more generally periodic in its character, the remissions being longer and more decided. The pain also is lancinating, and is chiefly confined to certain points. The patient is both able and willing to move about, the abdomen is not universally tender, but only on the points alluded to, neither is the distress of countenance so great as in the rheumatic affection. *Hysteritis* is distinguished by its access not being sudden or paroxysmal; by the existence of fever; by the pain being confined to the hypogastrium.

Spurious labour-pains are of frequent occurrence, and often harass the patient for weeks antecedent to labour; these, however, are readily distinguished from rheumatic pains. They generally come on in the night and terminate by morning; are uncertain in their appearance, the patient is able to move in any direction, and does so, being very restless. There is no tenderness, nor anxiety of countenance.

In natural labour there is not much tenderness, except during the last stage; the patient is able to move about; the pains come on regularly increasing in power till they reach their acme, and then declining.

[Having thus briefly glanced at the various species of pain with which uterine rheumatism may be mistaken, the author gives the following observations as distinctive of the latter:] Rheumatic pains come on suddenly, soon become *expulsive*, and of many minutes' duration; remissions short; pain attacks the entire uterus, which contracts firmly, inducing the patient to scream with agony; the position of the patient is upon the *back, unwilling to move;* the slightest excitement of the uterus produces pain; tenderness of the abdomen is diffuse; countenance anxious from the first. When the disease terminates it does so either by profuse perspiration or by discharge of urine.

[The treatment consists in the exhibition of Dover's powder in ten or fifteen grain doses every two or three hours, with emollient applications or belladonna plaister to the abdomen. The extract of belladonna may likewise be rubbed upon the os uteri.

As the subject of rheumatism of the womb has not met with very general attention, we shall here bring before our readers one of the best accounts of the affection with which we are acquainted, extracted from a recent work by M. Cazeaux (Traité Théorique et Pratique de l'Art des Accouchements.)]

"Rheumatism of the womb," says M. Cazeaux, "after having long attracted the attention of the German practitioners, was but little known in France, when M. Dezeimeris, in his journal (*l'Expérience*), made

publie a series of facts already known and published by certain German authors. About the same time, M. Stolz, who had beeome acquainted with the labours of our neighbours on this subject, studied the affeetion at the Clinieal Hospital at Strasburg, and eommunicated the results of his researches to his pupils. One of these gentlemen, Dr. Salathé, has very recently defended a thesis on this topic. To his work, and to the bibliographical researehes of M. Dezeimeris, I am indebted for what I am about to say upon this disorder, whieh is hitherto unknown to our Freneh nosologists.

"Aeeording to Radamel, rheumatism may attaek the non-gravid womb; but our business here is to study it only as oeeurring in pregnant women. It may attack at any stage of gestation, and we shall, therefore, after some general eonsiderations on the subject, point out the influenee it may exert in pregnaney, in labour, and in the lying-in.

"*Causes.* All sueh eireumstanees as are favorable to the development of rheumatic affeetions, may likewise lead to an attack of rheumatism of the womb. Thus exposure, whether momentary or prolonged, to dampness and eold, insuffieient elothing, sudden transposition from an elevated to a very low temperature, and all other causes, eonstitutional and atmospheric, regarded by medical authors as oeeasional or predisposing causes of rheumatism, may also produee that of the uterus. But, besides these general eauses, there is one peeuliar to the malady under consideration. I allude to the faeility with whieh this organ, under the thinned integuments of the abdomen, feels the impression of cold in the latter months of pregnancy; the abdomen being guarded, where it incloses the uterus, by extremely light garments, whieh are closely in contaet with it, and the anterosaeral region being often badly proteeted by jackets of insuffieient length.

"*Symptoms.* Rheumatism of the womb often attacks persons constitutionally predisposed to nephritis. It may eoexist with a general affeetion of the same nature; but, in a majority of cases, the uterus alone, and the adjaeent structures, are the seats of disorder. It has, besides, been frequently found to be a consequenee of the sudden cessation of rheumatic pain originally situated in some other part, and suddenly transposed to the womb. Whatever may be the mode of its onset, the disorder is easily recognized by very deeided characteristie features. Its principal symptom is pain; where not the least violence has been offered to the organ, the womb becomes the seat of a general or partial pain, the intensity of whieh varies from the very slightest sense of weight up to the most insupportable agony. It may affect the uterus wholly, or only attaek some particular part of it, as the orifiee, the fundus, or the eervix. Where the rheumatism is fixed in the fundus only, the pain is felt in the region above the umbilieus. It is inereased by pressure, by the contraetion of the abdominal muscles, and sometimes by the mere weight of the elothes; the patient, often, is unable to move; if the disorder is seated lower down there are shooting pains that run from the loins towards the pelvis, the thighs, the external genitals, and the sacral region, along the ligaments of the uterus. Lastly, when the eervix is the affected part, it may be known by the vaginal toueh, whieh gives rise to exeessive

suffering. But of all the causes that serve to exasperate the pain, none is so distressing as the incessant motions of the child.

"Like other rheumatic pains, those of the womb are moveable, and are observed occasionally to pass suddenly from one portion of the organ to another. They often suddenly cease, and proceed to attack some other organ. This is most apt to happen, when the uterine rheumatism has been preceded by a fixed pain in some other part of the body, and where remedies are in use calculated to recall the pain to its original seat.

"These pains are characterized by frequent exacerbations that are variable as to their duration and intensity; according to the stage of the malady, they are succeeded by remissions, during which the patient only complains of a vague sense of weight.

"The pains of uterine rheumatism are generally attended with a degree of recto-vesical tenesmus, which is violent in proportion to the severity of the pains and the approximation of the seat of the rheumatism to the lower segment of the organ. In such cases, the patient is tormented by perpetual desire to urinate. The discharge of the urine is accompanied with smarting pain, sometimes with severe pains, and in some instances the discharge cannot be effected at all; the efforts to discharge the contents of the rectum are, in some cases, equally fruitless. Most of the German authors attribute this double recto-vaginal tenesmus to the rheumatic disease, with is not always confined strictly to the uterus alone, but may likewise invade the circumjacent organs. M. Stolz seems disposed to think that it arises from the close sympathetic relations of parts so nearly approximated to each other. Should these new pains be owing to a vesical or rectal rheumatism, those of the womb would disappear, or, at least, be diminished in degree, according to the views of M. Salathé in his Thesis.

"It is to be supposed that there is a degree of heat and swelling of the affected parts; but it is easy to perceive the difficulty of absolutely determining this point, one which we are compelled to admit from analogy.

"Pains of such violence, situated in an organ so important, must of necessity produce a pretty severe general reaction. The disorder, like most of the inflammatory diseases, generally commences with a slight rigor, which lasts fifteen or twenty minutes. The succeeding fever diminishes, or may even wholy cease during the interval between the attacks, yet while they last it is commonly quite severe; the pulse is hard and frequent, the face flushed and excited, the tongue red and dry, the thirst urgent; the skin is hot, and the patient is often found to be extremely agitated and restless. Towards the close of the paroxysm, there frequently supervenes a copious sweat, which seems to be the harbinger of a decided improvement. After this, these general symptoms are appeased, together with the uterine pains, only to reappear with them, after the lapse of a few hours, or even of several days.

"1st. *Influence of rheumatism on the progress of pregnancy.* Where the attacks may have persisted for a length of time, or where they have been very violent, they are followed by uterine contractions, and may, in this way, bring on premature delivery. In such a case, the

patient suffers from severe tensive pain. This feeling of tension is not equable, for it rises to a great height, and then subsides—to begin again and pursue the same course at different intervals. At first the womb becomes partially, and afterwards universally hardened during the pain. The cervix becomes rigid and partially dilated, but its dilation is at first slow and difficult, and its subsequent progress does not correspond with the pace of the pains. The abortion, with which she is now menaced, is more likely to take place in the febrile than in the apyretic form of rheumatism. Indeed, abortion is not so common an occurrence in the case as might be presumed. In some instances the os uteri has been observed to dilate to the extent of two or three centimeters in diameter, the bag of waters has been formed, and afterwards withdrawn little by little, the orifice closing again, and all symptoms of labour wholly to disappear. As long as the diameter of the os uteri does not reach the extent of five centimeters, we may reasonably hope to put off the labour. These uterine rheumatic pains may simulate labour-pains, and lead to the belief that they are really labour-pains, while in fact they are not at all so. The characteristic signs of the rheumatic pains, given in the following paragraph, should serve to prevent such a mistake. It is surely to mistakes of this kind that we ought to refer those cases of supposed protracted pregnancy, and those instances of real labour, begun, and suspended again for weeks, and even for months together."

On the 21th January, 1842, Mrs. O., aged twenty-eight, in her first pregnancy eight and a half months, was suffering with the symptoms of severe rheumatism of the womb, which had afflicted her since about the 12th of the month. On the 15th of the month, fearing that labour was begun, I examined and found the os uteri dilated fully a quarter of an inch, and the cylindrical tubule of the cervix wholly gone; but on the 29th of the month, or fourteen days later, during all which time she suffered more or less, the os uteri was not only closed up, but the cylindrical tubule of the cervix was reproduced, and continued so until her child was born, on the 16th day of February.

About three years since, a lady, a missionary, landed here from a voyage from Madras, of one hundred and twenty days. She walked a good deal on the day of her debarkation, and was seized with the signs of labour the same evening, being not quite eight months gone with child. The pains were strong; I found the os uteri an inch and a half in diameter, with the membranes tensely drawn across the opening. The labour was suspended in the night, but returned again the next afternoon; and during twenty-four days that she continued to be annoyed, more or less, with signs of labour, the os uteri never closed, and at the end of that time she gave birth to a small, but healthy male child. I have had many occasions to see persons threatened with labour, and even precipitated into it, by rheumatism of the womb.

M. Cazeaux says nothing of the diagnosis, which I regard as one among the most difficult that can be presented to the mind of a physician. To make the diagnosis between pleurisy and pleurodyne, is

often a very difficult task, and one of considerable moment, too; but to make out satisfactorily all the points of difference betwixt rheumatism of the womb and the acute inflammations of the organ, especially in the lying-in, is still more momentous. Rheumatism is, so far as my experience of it enables me to speak, most apt to attack very nervous and susceptible women, who have become weakened and reduced in strength, from whatever cause. In such subjects, it is highly desirable to get through the case without much resort to the stronger antiphlogistic measures; but if we mistake an intense metro-peritonitis for a case of rheumatism of the uterus, we shall abstain from any vigorous and cradicative employment of the lancet, under the vain hope of curing our patient by milder and less costly processes than the exhausting venesections which are so indispensable in the true inflammation.

I have had such great difficulty in settling, to the satisfaction of my own judgment, the diagnostic differences betwixt the two maladies, in several violent cases that have fallen under my notice, within a few years, that I should be thankful for the indication of a clear method of coming to the decision. In both maladies is the fever often violent; in rheumatismus uteri there is rheumatic neuralgia of other parts, and a preceding history, that may enlighten the practitioner to his decision. In the two diseases there is equal sensibility of the abdomen; meteorismus may accompany both. The heat of skin, and frequency and volume of the pulse, are alike in each, the decubitus similar; but the tongue is clean so far as I have noticed it in the rheumatic case. Distracted with the uncertainty and doubt in which the case is involved, I have commonly been able to satisfy my mind by a direct appeal to the organ itself, in the operation of *touching*. In both maladies the *touch* is at first painful; in metritis and metro-peritonitis it is so under all circumstances, but in rheumatismus uteri, though the first touch of the womb is painful and *quick*, yet, when the organ is gently and slowly raised upwards with the index and medius, the pain either ceases wholly, or is much mitigated, by taking off in this way the tenesmus uteri; not so in the inflammation, where every touch is more painful the more it is prolonged. I may be permitted to add, that I have heard of several cases of death from puerperal fever, where, upon an autopsy, not the least vestige of inflammation was discovered, either in the peritoneum, the uterine veins, the substance of the uterus, or any of its appendages. Is it uncharitable to suppose that such patients died, not with the malady for which they were treated, but with another disorder, to wit, rheumatismus uteri, which demanded quite a different mode of cure?* But I fear to extend this note too far; and therefore, M. Cazeaux proceeds as follows:

* M. Cazeaux himself, near the end of this article says, that it is often liable to be mistaken for a pure inflammation, and then treated by remedies more likely to be injurious than beneficial. If it be true that the danger to life from rheumatismus uteri be but small, as M. C. supposes, it is at least dangerous when improperly treated under a false apprehension of its dangerously inflammatory and destructive character.

"2d. *Influence of rheumatism upon labour.* An attack of uterine rheumatism generally retards the progress of a labour, and sometimes even renders the spontaneous expulsion of the fetus wholly impossible. In addition to the general phenomena I have described, there are here some special ones to be met with. 1st. It is well known that a normal contraction does not begin to be painful until it has accomplished the greater part of its task, and is in the act of dilating and distending the os uteri; in other words, the true pains of labour do not begin until the instant at which the energy of the corpus uteri begins to overcome the resistance of the cervix. In rheumatism of the womb, on the other hand, the uterine contraction begins to be painful from the start, and before the least power is exerted on the neck, so that the cause of the pain is not in the violent distension of the orifice, but in the contraction itself, in other morbid circumstances, and in other relations of the nerves and contractile fibres of the womb. 2d. In a natural labour the contractions commence at the fundus uteri, and are directed towards the lower segment. In rheumatism, instead of commencing at the fundus, they commence at the painful point, and run towards the neck in an irregular manner. Again, the pains exist before the contractions of the womb, and, under their influence, when they are established, acquire a high degree of intensity. Their violence sometimes arrests the contractions before they have run through their ordinary cycle. They are, in such a case, brisk, short, and grow less and less frequent. 3d. Towards the close of the labour, when the action of the womb requires to be sustained by the voluntary contraction of the abdominal muscles, the woman, for fear of increasing her sufferings, refrains from contracting her abdominal muscles, which causes the labour to be excessively slow. The patient is in a state of extreme anxiety; the frequent pulse, the hot skin, the thirst, the urinary tenesmus, are much augmented. When the sufferings are too much protracted, she at last falls into a collapse (which is often a fortunate event for her), during which the pain is suspended. Under these circumstances, a profuse sweat has been observed, which has had the happiest effect on the rest of the labour. But in other instances the womb grows more and more painful; it is rather in a state of permanent contraction or fibrillar vibration, than of real contraction; the pulse becomes accelerated, and now the woman is under the influence of a metritis which renders the labour extremely painful.

"3d. *Influence of rheumatism of the womb on the puerperal functions.* One may conceive, a *priori*, that uterine rheumatism, by causing irregular or partial contractions of the organ, immediately subsequent to the birth of the child, might be the occasion of much difficulty in the delivery of the placenta; but this is not the place to discuss that point.

"In health, after the delivery, the womb contracts, and thus prevents hemorrhage. But in rheumatism this return of the organ is very incomplete; it remains above the pubis, and is large. The after-pains are now very painful, and continue for a long time. The uterine vessels are less compressed, whence may arise very copious floodings. On the other hand, the state of suffering in which the

organ is placed diminishes the lochial discharge and the secretion of milk. The persistence of abdominal pain, added to the symptoms of a general reaction, might lead to the diagnosis of a peritoneal inflammation, though none such should really exist.

"*Prognosis.* Rheumatism of the womb is not a disease capable of causing the loss of the mother's life, but from the pain it occasions, and the mistakes to which it leads, it nevertheless merits all the attention of the physician. In pregnancy it may cause abortion, and though it does not generally exhibit itself until the sixth month, it is always unfortunate for the child to be born before full term. We have already remarked upon the unfavorable effect produced by the disorder on the course and character of labour-pains. On many occasions it has led to the necessity of artificial delivery. It may likewise render the delivery of the after-birth difficult, and derange the course of the phenomena that ought naturally to follow after the birth of the child. At this period it is often confounded with phenomena that are purely inflammatory, and is then treated by measures that are hurtful rather than beneficial.

"The disorder is for the most part less favorable when attacking at an early than a late period of gestation, because it has a more unfavorable influence on the progress of the gestation, as yet incompletely established and settled, and also because it has a tendency to be reproduced again and again, before the completion of the term, and on account of its disposition to return during the labour, which it is apt to render laborious.

"*Treatment.* 1st. During pregnancy, bloodletting, intestinal revulsives (ipecac., castor oil), baths, opiated lotions for the abdomen, anodyne potions, sudorific drinks. Such are the measures which have been most constantly successful. In cases where the affection of the uterus had followed the sudden disappearance of a rheumatic pain of some other part, revulsives should be applied to the part first affected. 2d. During labour the same means are applicable; should they fail, and the os uteri, as to its dilatation, admit of it, let the delivery be effected by means of turning, or the forceps. 3d. After delivery, sudorific drinks, anointing the abdomen with opiated ointments, baths, leeches to the vulva, and when the lochial discharge has failed, ipecac. and opium combined."

Note in Colombat on Diseases of Females, translated by Dr. Meigs, p. 287.

ART. 89.—*Treatment of Pruritus Vulvæ.* Dr. Meigs observes that having been many times consulted for the relief of pruritus vulvæ, and most frequently in pregnant women, he has rarely had occasion to order anything more than the following formula:

R. Sodæ bibor. ʒss;
Morphiæ sulph. grs. vj;
Aq. rosæ destil. ʒviij. Mf. Lotio.

He directs this to be applied three times a day to the affected parts, by means of a piece of sponge or a piece of linen, taking the precaution first to wash the surfaces with tepid soap and water, and to dry them

before applying the lotion. He confidently recommends this prescription as suitable in most cases of this distressing malady.

Ibid. p. 271.

Art. 90.—*Prevention of Abortion.* The following practical remarks are also from the pen of Dr. Meigs, the translator of Colombat:* "I believe that the most successful mode of treating persons who are predisposed to abortion, before quickening, is one which I have long employed, and with a most satisfactory result. If the patient has had repeated miscarriages, I advise her to use an anodyne enema, consisting of a wineglassful of boiled starch, mixed with forty drops of laudanum, to be taken at bed-time, and to be repeated every night until quickening takes place. Perhaps the influence of the laudanum may be useful in suppressing or lessening the catamenial (?) act, or the efforts of the vesicular developments in the ovaries; or at least it may deprive the uterus of an abnormal degree of sensibility, the persistence of which might lead to its early contraction, and consequent expulsion of the fœtus.

Ibid. p. 593.

Art. 91.—*On Rupture of the Uterus, with a case in which Gastrotomy was resorted to as the mode of Delivery.* By William Jackson, Esq., Lecturer on Anatomy and Physiology at the Medical Institution, Sheffield.

(*Provincial Medical and Surgical Journal*, Sept. 1845.)

The fatality of this dreadful accident to the parturient female demands our sympathy, and calls for our utmost exertions to devise some means of relief, if any can be found, under circumstances presenting an almost hopeless condition of our patient; for an escape from this terrible disaster may be considered almost miraculous. The uniformly fatal termination in a very short space of time, of every case of rupture of the uterus that has come to my knowledge in the practice of my friends, or of my own, induced me seriously to reflect what could be done, or what might be rationally attempted, in these deplorable cases. Having many years ago been instructed in a school† whose teachers repudiated the uncharitable doctrine of non-interference, once held by Drs. W. Hunter and Denman on this subject, and although the experience I have had since may not give encouragement to act otherwise, yet the recorded cases of successful attempts to rescue the subjects of these unhappy cases from death, have influenced me to adopt prompt and energetic measures of relief in every example requiring my interference. I regret to learn, however, that cases in which the fœtus had escaped into the peritoneal cavity, are very generally abandoned to their fate. Under the impression which past experience had had upon my mind, and from a calculation of the relative results of different modes of practice adopted in these cases,

* Op. cit. † Dublin Lying-in Hospital.

I determined when a fair opportunity should occur, to resort to gastrotomy, as the most rational practice, especially in those cases of escape combined with a diminished capacity of the pelvis. This practice was resorted to in the following case:

Sarah Booth, aged 26, a stout healthy female, married seven years, and is the mother of three children. Her former labours had been severe and protracted, but she had done well under the management of the midwife, who had been in attendance in the present instance, till the supervention of the accident.

She first felt pains about five o'clock a.m., of November 19th, 1842. The labour proceeded very slowly, arising, there was reason to apprehend, from a disproportion between the head of the fœtus and the pelvis, the latter being slightly contracted, and the former unusually large. The midwife stated, that after severe suffering through the day, the head had advanced considerably in the pelvis, when about four p.m., during the continuance of severe pain, there was a sense of something suddenly giving way, after which the head receded, and a considerable hemorrhage followed. The patient became faint, and sickness supervened, but no actual vomiting followed. She continued faint, pallid, and restless, with ineffectual efforts to vomit; but no further uterine action occurred, although she complained of distressing sensations in the abdomen. The parties becoming alarmed, sent for the late Mr. Clarke, surgeon, of this town, who from a careful examination, ascertained that a rupture of the uterus had occurred, and he lost no time in obtaining a consultation, for which purpose he requested my advice. We visited the patient about five o'clock, and made an examination. No presentation could be felt; the vagina was filled with coagulated blood, and the fœtus could be felt through the abdominal parietes, having escaped into the peritoneal cavity. The poor woman's state was alarming; pulse rapid and feeble; pallor of the countenance; slight efforts to vomit; great restlessness and anxiety characterized her present condition. There could be no doubt, from our inquiries, that the whole of the fœtus, and probably the placenta, had at once escaped into the cavity of the abdomen. A question arose in what way the child was to be removed. We considered that to introduce the hand into the uterus, now considerably contracted, and drag the child again through the lacerated wound of that organ, and afterwards to have occasion to resort to great force in effecting the delivery of the fœtal head through the pelvis, would be likely to inflict additional injury upon the parts, and to exhaust the feeble powers of life yet remaining. It appeared to me that gastrotomy offered the best chance for our patient's life. In this opinion the gentlemen (Messrs. Clarke and Gillett), who assisted me in this case, concurred.

A clear and candid statement of the circumstances of the case and its propects, every way considered, having been given to the poor sufferer and her husband, they willingly consented to the adoption of any measures which we judged advisable. As a necessary preliminary step, the urine was drawn off, and the patient was placed in a convenient position, on her back on the bed. The integuments of the abdomen being kept on the stretch by an assistant, an incision about six

or seven inches was made with a scalpel, extending from two inches above the pelvis, to a short distance of the umbilicus. The peritoneum having been laid bare, an opening was made, and that membrane divided co-extensively with the external wound. The omentum now protruded, which being carefully held on one side, a tense bag, containing a yellow fluid, presented itself, being, in fact, the ordinary membranous envelope of the fœtus in utero. The contents, consisting of the liquor amnii, together with a large quantity of coagulated blood, were evacuated by a puncture, and the head of the child presented itself. The fœtus was extracted by the feet, and it was found that the external wound was barely sufficient to allow of the passage of its head. The placenta had been expelled from the uterine cavity, and was lying amongst the intestines, together with a considerable quantity of fluid and coagulated blood, all of which was removed. The time occupied in the performance of this operation was not more than a few minutes, and, during its continuance, the patient, although perfectly conscious, remained quite tranquil. The omentum and intestines protruded from the wound, but were easily replaced, whilst the edges of the wound were brought together by sutures, strips of adhesive plaster, and a firm bandage completed the dressing; after which, our patient was placed in a favorable position. The poor woman bore the operation with great fortitude, and expressed herself as being very much relieved, and considered that she had terminated her labour with much less suffering than she had experienced on former occasions. The pulse almost immediately rallied, and the appearances of extreme exhaustion subsided. The child, a female, was considerably above the middle size, weighing eleven pounds and a quarter, and had, no doubt, ceased to exist at the period of the accident. Wine and a full opiate were given, and we left her in a composed state at nine o'clock, under the charge of an experienced nurse, who had instructions to administer nutritious fluids, and, if needful, more wine.

[The patient did not at first appear to suffer from the consequences of this severe operation, but as might reasonably have been anticipated from the nature of the case, symptoms of peritonitis soon declared themselves, and spite of a very judicious line of treatment, passed into those of fatal exhaustion. The patient finally sank on the eighth day after delivery.]

Autopsy.—The abdomen was considerably distended, apparently with gas. The length of the wound in the abdominal parietes now measured four inches, and had united generally by the adhesive process, excepting at some points whence there issued a slight purulent discharge. The divided abdominal peritoneum had become adherent along the wound to the subjacent parts. On breaking down the adhesions, and separating the edges of the wound, a little purulent matter was found. The convolutions of the intestines and the omentum were in several places slightly adherent by lymphatic effusion, and this condition prevailed in several places between the contiguous surfaces of the serous membrane. The general peritoneal surface exhibited a slight state of vascularity, and this condition was more conspicuous in the neighbourhood of the uterus, which viscus was slightly adherent to the bladder. Four ounces of a darkish-brown fluid were effused into

the cavity of the peritoneum, but not at all intermixed with pus. The omentum presented throughout its extent a brown colour; but there was no gangrenous appearance in this or any other part. The stomach was healthy, and very slight vascularity was observed on its outer coat. The uterus had contracted to the size to which it is usually reduced about the seventh day after delivery. It presented a perfectly normal appearance, excepting a slightly increased vascularity, and felt firm in its general structure. Its outer covering, as before stated, was slightly adherent to the contiguous peritoneal surface. Upon raising up this organ towards the pubis, a dark-brown ragged opening was discovered, chiefly seated in the posterior wall of the vagina, and apparently extending through a small portion of the cervix uteri. The length of this opening varied, according as it was enlarged by stretching, or suffered to remain in its original state with the parts *in situ*. The variation of the laceration was thus from three to five inches. Besides this longitudinal laceration, there was a considerable transverse division just at the point where the vagina joins the cervix. There had been no attempt to close this lacerated wound by any reparative process; but the contiguous surfaces of the peritoneum had become so generally adherent as effectually to prevent the secretions or discharges from the uterus or vagina from passing into the abdominal cavity. The edges of the lacerated opening were irregular and jagged, and of a dark brown colour, but free from any gangrenous state. The inner surface of the organ presented nothing unusual in its appearance. The pelvis, although apparently well formed, was slightly under the natural dimensions in its antero-posterior admeasurement, and considered in connexion with the large size of the fœtus, (eleven and a quarter pounds,) was decidedly disproportioned; the head being firm and unyielding had resisted the violent action of the uterus from five in the morning till four p.m., eleven hours.

Remarks. We have now to enter upon the reasons which induced us, in this instance, to resort to the formidable operation of gastrotomy.

The suddenly fatal termination in every case of ruptured uterus, attended by an escape of the fœtus into the peritoneal cavity, which had ever been witnessed by myself or friends, induced me seriously to reflect upon the adoption of some other method of proceeding, with a view to afford the unfortunate sufferer from this accident a better chance than has resulted from the ordinary mode of delivery. Fortified by the success of continental practitioners, we determined to resort, in this case, to the operation recorded in this paper.

The subject, as regards the particular practice to be adopted, is necessarily divided into those cases in which the contents of the uterus have escaped into the peritoneal cavity, and those in which a part or the whole of the fœtus still remains in the uterine cavity. In the latter class of cases the practice is clear; all are now agreed that immediate delivery is to be effected, either by instrumental or manual assistance in the ordinary way. It is the first about which we have to inquire; and the rule laid down in this country has been to deliver *per vias naturales*, excepting in those examples in which there is much pelvic deformity, or an undilated state of the os uteri.

Now, in the present instance, neither of those conditions existed, excepting the former in a slight degree. The reasons which induced us to resort to gastrotomy were: 1st, the extremely exhausted state of the patient; 2d, the apparently large size of the fœtus, thus constituting a disproportion, even in a pelvis of natural dimensions; 3d, the long period of time which had elapsed since the occurrence of the accident; and, as regarded the method of delivery generally advocated, 4th, the risk of enlarging the lacerated opening in the uterine parietes; 5th, the violence necessarily involved in the delivery by the natural outlet, first through the laceration, and secondly of the head through the pelvis, presenting to our view a hopeless, heartless proceeding. There appeared to us far less violence, force, and rashness in the simple incision of the abdominal muscles. A conviction filled our minds, that our patient would inevitably have sunk exhausted from the violence necessarily attendant upon the ordinary mode of delivery. Is it not probable that, in cases in which the rupture is in the substance of the uterus, the organ immediately contracts after the expulsion of its contents? and, if so, in dragging the child through an opening, now considerably diminished in size, severe additional violence would be inflicted.

By gastrotomy we moreover offered to ourselves the advantage of a more rapid mode of delivery, less exhaustion, and a complete removal from the peritoneal cavity of extravasated blood. In every case of post-mortem examination which I have made or witnessed, of ruptured uterus, a large amount of fluid and coagulated blood was found in the peritoneal cavity. The immediate result of the operation—a decided revival of the vital powers—more than confirmed our anticipations. As it appears to my view, two distinct advantages, besides those already alluded to, would result from the section of the abdominal muscles in *all* cases of rupture of the uterus, with escape of the fœtus, especially if the operation were made continuous, as it were, with the accident. The first would be a fair chance of preserving the life of the child; the second, the system would not be subjected to two shocks, with an interval, during which, generally, the vital powers are rapidly sinking or become exhausted. The adoption of the practice now advocated would accord with the principle in surgery, of immediate amputation in compound fractures from gun-shot or other injuries.

I am disposed to infer, that lacerated wounds of the vagina, and especially if their direction be transverse, are more difficult to repair, and consequently more fatal in their consequences, than an equal extent of division of the substance of the uterus alone. My reasons for so thinking are derived from the fact,—that in every instance which has come under my own observation, the examination has shown the rupture to have been in the posterior part of the vagina only, or extending into but a small portion of the cervix uteri. Besides wounds of lax membranous parts do not readily keep in contact, whereas the walls of the uterus, being firm, the organ, by its contraction, preserves the edges in close apposition, and favours the re-union of the parts.

Now let us endeavour to place in order the various points of our subject:—

1st. There have been recorded a few, (one or two ?) cases of re-

covery from rupture of the uterus, complicated with escape of the fœtus into the peritoneal cavity, having been left to chance. Whether these were cases of rupture, or of extra-uterine pregnancy, is now extremely doubtful. They may be classed amongst the fabulous.

2d. There are a few well-authenticated examples of recovery in which the delivery had been effected *per vias naturales.*

3d. A few recoveries have resulted in cases wherein gastrotomy had been the mode of delivery, and equally entitled to our credit.

In again adverting to British practice, as regards the Cæsarian operation, it will, I think, be conceded, that the error has been in procrastination: and perhaps continental practice has overstepped the correct boundary line in its precipitancy; yet it is highly probable more lives have been lost by the adoption of the former than the latter principle. Who would not admit, but that in the two cases detailed by Dr. M'Keever* there would not have been a better chance of recovery from gastrotomy, than by the practice pursued. In the one instance an ineffectual attempt at delivery in the ordinary mode was made; and in the other, the patient lingered some days, and the fœtus was found in the peritoneal cavity after death.

Alluding to cases which would be likely to require the operation of gastrotomy, Dr. Ramsbotham † observes—"But if I found the patient sinking, if the powers of life were ebbing fast, and particularly if thirty or forty minutes had elapsed since the rupture, and the movements of the fœtus had quite ceased, I should by no means sanction the incision, because of the *painful nature* of the operation; and because I should presume it would *avail nothing*, and might probably hasten her death." Now some of the reasons which would influence Dr. Ramsbotham not to resort to gastrotomy, were just those which induced me to avail myself of it. Just as the patient was sinking, so should I hasten to remove the cause, or one of the causes—the presence of the child amongst the viscera of the abdomen. Besides, the operation is not comparatively a painful one; certainly not so painful as that of amputation or lithotomy; and its duration, as applied to these cases is very short, not more than two minutes. Instead of causing increased depression, the patient revives under it, as was the case with our patient, who immediately declared that she had experienced but very little pain, far less as regarded the operation than on the occasions of her former labours.

I can fully bear out the opinion of Dr. M'Keever, in his Essay, that this dreadful accident occurs more frequently amongst the lower ranks than the higher; and I would suggest whether this result does not arise from the greater frequency of deformity of the pelvis as the consequence of rachitis or scrofula in the former class; and hence, it is highly probable that in large towns, where poverty and unhealthy occupations prevail, and especially were children are engaged in cramped or restrained positions, as in cotton factories, &c., we shall find a

* Practical Remarks on the Lacerations of the Uterus and Vagina, pp. 14, 82.

† Dr. F. H. Ramsbotham's Obstetric Medicine, p. 601; 1841.

higher ratio of this kind of difficult and dangerous parturition. Judging from the results of my own practice, during a period of upwards of thirty years, and from the information I have been enabled to collect from the practitioners in this town, who have had the most extensive opportunities, that rupture is exceedingly rare in this district. Four cases have come under my own immediate notice, of which one was in my own practice, and the other three in consultation. In calculating the relative frequency of rupture of the uterus during the last twenty-five years in this district, it would probably be not far from a correct average to fix it at one in five thousand.

It would further appear that Dr. Hunter's and Dr. Denman's original opinion and practice, (non-interference,) is still acted upon by several surgeons of the present day, and cases of rupture of the uterus are still left to chance.

ART. 92.—*Clinical Researches on Ulcerations of the Cervix Uteri.* By M. BOYS DE LOURY, Senior Surgeon to the Hospital of St. Lazare, and M. COSTILHES, M.D.

(*Gazette Medicale*, Juin 1845.)

In alluding, in the course of our retrospective labours of the last half year (vide Half-yearly Abstract, vol. I. p. 233) to some excellent papers published in the *Lancet* by Dr. Bennet, we expressed our conviction that the inflammatory conditions to which the uterine neck is subject, are not duly appreciated in this country, and that a more general acquaintance with that branch of pathology would afford a key to many of the anomalous disorders of the female system which are at once the annoyance and approbrium of the British medical practitioner. We are happy, therefore, in having the opportunity of laying before our readers the present abstract of a series of essays in the course of publication in the *Gazette Medicale* of Paris. The first paper commences with an account of the institution to which the authors are attached, and after giving minute directions for the introduction of the speculum and the practice of the *trocar*, proceeds to the consideration of the different forms and dimensions of the cervix and os uteri.

On the dimensions and different forms of the cervix and os uteri. In studying this subject, two grand divisions are usually acknowledged; that of women who have not, and that of women who have had children. It is a generally received opinion that the cervix uteri in women who have borne children is more tumid, and that the os is more patulous than in virgins; the authors consider that the opinion is too exclusive, and state that they have met with many exceptions to it. They likewise observe that after the critical period, it is not uncommon for the neck of the womb to resume its primitive condition.

It is not easy to give the exact physiological dimensions of the uterine neck; but this is a point of great importance, for it is indubitable that many regard, on the one hand, that as an engorgement which is but a natural condition of the parts, and on the other consider the

organ to be sound, when it is really diseased. The smallest cervix which the authors have met with had for its greatest lateral diameter 1½ centimetres,* for its antero-posterior diameter 1 centimetre. The largest size, free from engorgement is always 3 centimetres at least in its lateral dimension, with an antero-posterior diameter of 2 centimetres.

In consequence of this difference in diameter, the uterine neck has an oval shape, so that, observe the authors, whenever the antero-posterior diameter equals the lateral it is a proof of engorgement.

In its healthy state, the cervix uteri usually presents the form of the segment of an ovoid; at other times, especially in barren females, it assumes a more conical shape. The os uteri in women who have never miscarried or borne children, seldom exceeds five or six millimetres in length, unless it is of a more than commonly rounded shape, when, of course, its diameter is less.

In women who have borne children, the os uteri is generally increased in size, and has a torn or lobular appearance, and is at the same time more or less patulous.

In pregnant women, the lips, of the os uteri, as has been remarked by M. Marc d'Espine, are soft and swollen, and the orifice is so wide as readily to admit the finger.

In menstruating females, it is, for the most part, agreed that the finger may be passed into the os; this statement does not accord with the authors' observations.

The position of the cervix is not uniform. It is seldom that it is situated directly in the centre of the vagina, as there is generally a slight *anteversion* of the organ, with obliquity to the right or left, most frequently the latter. This can only be ascertained by the *toucher*; for the speculum by its pressure restores the organ to a central position, and we thus overlook a conformation which is perhaps the direct cause of the symptoms for which we are consulted.

On ulcerations of the cervix uteri. The authors study this form under its different degrees of severity, and treat in the first place of the

Simple ulcer or erosion. The initiatory stage of the simple or mild form of ulceration consists of a redness of greater or less intensity, most pronounced on the lower lip of the os tincæ, but extending over the entire surface of the cervix, and not accompanied by any great degree of pain. If this redness should increase, the organ becomes tumefied, and at the same time of a deeper colour, and the engorged capillaries bleed upon the slightest touch. Under these circumstances ulceration soon ensues, commencing either in one or many points at the same time. The erosion, though it sometimes invades the whole cervix is most generally confined to a space not exceeding from four to six millimetres around the os, and rarely proceeds to a greater depth than the thickness of the epithelium.

This is the ordinary mode of formation of the simple ulcer or erosion; but they occasionally arise after a different manner. The authors state that they have occasionally noticed small pustules disseminated over the cervix, which form rounded ulcers by their spontaneous rupture. When this event has taken place, the ulceration cannot be

* The French centimetre is 0·393 in. and the millimetre is 0·039 in.

distinguished from those which originate in the redness of the mucous membrane above mentioned. In either case a more or less abundant discharge is established as soon as the solution of continuity has occurred.

The treatment of this form of ulceration is simple, and consists for the most part of emollient or gently astringent injections, warm baths, and rest, with abstinence from coition. Bloodletting, either general or local, is seldom or never required. In some cases, however, it may be necessary to cauterize the parts mildly with lunar caustic once or twice a week, in order to modify the vitality of the mucous membrane.

The authors terminate this section by the mention of a variety of superficial ulceration, which is of rare occurrence, but very troublesome to cure. It is thus described: "This form of the disease occurs under three different grades. 1. It consists of a puffy erosion, which is soft to the touch, bleeds readily, and is elevated above the level of the sound portion of the cervix. The discharge to which it gives rise is yellow or yellowish green, and always abundant. 2. Sometimes it has a granular aspect, but neither bleeds nor gives rise to any discharge. And 3. In some cases it is seen in the form of a large smooth erosion covered with a tenacious transparent exudation.

"This variety of ulceration is rare; we seldom meet with more than two or three instances in a year, and these are in women who present more or less engorgement of the cervix, and complain of a sense of bearing down, with pains in the hypogastric region."

The diptheritic ulcer. "We are not aware that this form of ulceration of the cervix uteri has ever been described: its characters are nevertheless, of sufficient importance to deserve a separate mention, since it may be readily confounded with syphilitic ulceration, to which, at first sight, it has considerable resemblance.

"As in the case of diptheritic angina, the complaint begins with redness and pain, but at this period there is no discharge. In a few days, however, the diseased surface puts on its characteristic appearance, which is that of *small, whitish, smooth and shining patches, of different and irregular forms.*

"These patches are extremely adherent to the cervix uteri, so much so that the most forcible injections, or even friction with lint, fails to detach them. At the end of a few days, however, they fall off spontaneously, leaving an ulcer of a simple aspect which cicatrizes with the greatest facility." The authors are undecided as to the cause of this ulceration, but are inclined to attribute it to a specific action. Their chief object in alluding to it is to distinguish it from syphilitic disease. The latter form of ulcer is characterized by its *depth and irregularity of form, its surface being covered with a grayish pellicle.* If there should be any doubt, it is resolved by the very superficial erosion which is seen after the detachment of the pseudo-membranous patches of the diptheritic variety.

The treatment of this form is purely local, the application of a weak acid to the ulceration is the only indication to be fulfilled. The authors are accustomed to trust to the hydrochloric acid, followed by alum injections, and the warm bath.

Linear ulceration (*Fissure*). The third form of ulceration noticed by the authors consists in that which occupies the bottom of those fissures of the os uteri which commonly attend upon abortion or difficult parturition. These ulcerations are very apt to escape detection, as they are frequently seated upon the internal aspect of the os. The only way in which they can then be brought into view is by pressing the valves of the speculum forcibly backwards, so as, as far as possible, to invert the os uteri. This form of ulceration, as it extends, is usually accompanied by engorgement of the neck of the womb, which increases in proportion to the depth of the ulcer. It is sufficiently easy of cure if taken in time, but if not discovered until the engorgement is considerable, the cure is rendered exceedingly difficult. The treatment by occasional cauterization with the nitrate of silver will succeed generally, in recent cases, in curing the patient in the space of a few weeks. The patient must, however, be told that the few first applications of the caustic are liable to be attended with hemorrhage. In the more advanced cases, complicated with engorgement of the cervix, it will be necessary to premise the caustic treatment by the application of leeches or other local antiphlogistic means.

Fungous ulceration and vegetation of the cervix uteri. This kind of ulceration is frequently seen in women who have borne many children. It generally supervenes upon some milder form of disease, which has been neglected, and seldom appears as an initiatory form of disease; in fact, it is no more than is observed in neglected sores on other parts of the body. This variety of ulceration is covered with fungous elevations, which may sometimes give rise to the suspicion of malignant disease. It is generally accompanied with a sensation of weight in the hypogastric region, and gives rise to a more or less abundant muco-purulent discharge. It is not, however, painful to the touch. Menstruation is generally disturbed, being too abundant, and the periods too frequently repeated. Although the fungous ulceration does not ordinarily induce serious consequences, it is difficult of cure. It is not unusual to see women under treatment three or four months before cicatrization can be obtained, and then not without the employment of energetic remedies.

In the treatment of these ulcerations, the authors do not find the ordinary caustics, as the nitrate of silver and the acid-nitrate of mercury, of sufficient power, they have therefore recourse to the Vienna caustic,* made in a solid form, which they apply once or twice in the week, according to circumstances. When the surface of the ulceration is completely changed, this powerful caustic may be replaced by the stick of nitrate of silver. As auxiliaries in the treatment, the authors recommend the application of the strong mercurial ointment, applied by means of lint; as also emollient and astringent injections.

Granular ulceration. This form of ulceration is characterized by small granular eminences, similar to those which are seen in granular conjunctivitis, and which speedily ulcerate. The affection is in general superficial, and very accurately defined; it most commonly attacks the

* For composition of this caustic, vide 'Half-yearly Abstract,' vol. I, p. 67.

lips of the os uteri. It is in general rebellious to treatment, requiring in most cases two months for its cure.

The authors dispute the opinion of M. Gibert, that the granular ulceration is of venereal origin; in their experience, it has occurred in women in whom no suspicion of the kind could be entertained, and it has been permanently cured without the use of any mercurial.

In the treatment M. Gibert uses an alcoholic solution of tannin as a topical application, and submits all his patients to a mercurial course. The authors recommend slight cauterization with nitrate of silver, and absolute rest.

Syphilitic ulceration. True chancre having its seat in the cervix uteri is not a common occurrence. It has been confounded by many writers, and by M. Duparque among the number, with secondary ulcerations; MM. Cullerier and Ricord, whose experience has been great, seldom meet with more than four or five cases of true chancre in these parts during the year. Chancrous ulceration commences by the tumefaction of one or more mucous follicles, which ulcerate at their summit, and rapidly enlarge in their circumference. Their aspect, when fully formed, has been alluded to when speaking of the diptheritic ulcer. The authors have never witnessed either induration of the edges of the sore, nor buboes in the groin. The treatment employed by them consists, first, in a general anti-syphilitic medication; and, secondly, early cauterization, so as speedily to alter the character of the sore. They subsequently apply aromatic wine, or mercurial ointment, by means of a pledget of lint.

Ulceration of the cervix uteri during pregnancy. It is a matter of surprise that the influence of the pregnant state upon ulceration of the neck of the womb has been so little attended to. It is, nevertheless, of the highest importance to have a due appreciation of this coincidence; for it is to the effect of these ulcerations that many of the miscarriages, so common in young females, is to be attributed. This affection is far from uncommon, but as yet few practitioners are aware that ulcerations of the neck of the uterus put on altogether a different appearance, and have an entirely different import accordingly as the womb is empty or impregnated, and that it is possible by judicious treatment to prevent an almost inevitable miscarriage.

The most common cause of ulceration in pregnancy is excessive intercourse, but it was in many cases the result of previous abortion, and existed prior to the pregnancy during which it was discovered. These ulcerations constantly present themselves under the same aspect, which is that of irregularly round fungous sores, generally of a violet hue. They are accompanied by more or less engorgement of the cervix, and give rise to lumbar and hypogastric pains. The discharge is always of a yellowish white, and *never green*, and abounds in proportion to the extent of the ulceration.

Ulceration existing in the pregnant state is always more tedious than when it occurs previous to conception; and is a serious lesion, inasmuch as it has a great tendency to induce abortion. It may, however, be remedied by a suitable treatment in the majority of cases. This treatment is by the means of caustics, the best of which, according to the authors, is the solid Vienna paste. Their mode of using it

is as follows: "After having cleansed the diseased part of the mucous and purulent secretions in which it is enveloped, we brush over the ulceration with the caustic, and afterwards fill the vagina with soft lint. This plug is to be removed at the end of twelve hours, and an astringent injection is to be thrown up. This is repeated until the ulcer exhibits a granulating surface."

[We shall omit the observations of the authors upon the subject of cancerous ulceration of the neck of the womb, as nothing is adduced which in the slightest degree adds to our previous acquaintance with these hopeless cases. The reader's attention may be drawn with more profit to the remarks upon the engorgement of the parts. They enter upon the subject with a brief discussion of the opinion maintained by many writers, that engorgement of the neck of the uterus in all cases precedes the ulcerations. This they refuse to admit as a general rule, although they do not deny its occasional occurrence prior to the lesion of the mucous membrane.]

Engorgement of the cervix uteri may be general or partial, in the latter case the lower segment is the one most commonly affected. The os uteri in such instances is much distorted. Engorgement is seldom seen in young girls, ulceration alone being the ordinary event. After the age of twenty-two, on the contrary, ulceration rarely occurs without more or less engorgement. The cause of this is undoubtedly the violence to which the part is exposed in sexual intercourse, and especially in abortion or laborious deliveries.

Upon examination by the *toucher*, an engorged cervix feels hard to the finger, whether there be ulceration or not. The surface is irregular and mammillated. The local symptoms are a feeling of weight and tension, painful sensations in the groins and thighs, and difficulty in walking. The action of the bowels is sometimes dreadfully painful, so much so as, in some cases, to cause fainting. When the malady has existed for a length of time, it makes great inroads upon the constitution, fever arises, and the patient falls into a state of marasmus. In the majority of cases, an opake or puriform discharge forms a prominent symptom. Menstruation is irregular, either as to period or quantity, and accompanied with more or less dysmenorrhœa.

[The diagnosis between simple engorgement and scirrhus is thus laid down by the authors:] The rugosity of the cervix, although evident in engorgement, is not so highly marked as in scirrhus, neither is the hardness so considerable in the former as in the latter. There is, however, the same feeling of weight in the pelvis, the same difficulty in walking and standing; but the pain is of a character in scirrhus, which cannot be mistaken, a plunging or dashing pain. In many cases, however, it must be allowed that great circumspection is required in arriving at a correct diagnosis. Time only will elucidate the point. The ulcerations, however, in simple engorgement, are not deep, neither is the discharge sanious or fetid as in cancer. The little effect of treatment also in the latter, as compared with the former, gives great certainty to the diagnosis.

[Simple engorgement of the cervix uteri is not in general a serious malady. It causes, it is true, severe suffering, but under proper treatment it is readily cured. The treatment recommended by the authors consists, in the first instance, in repeated small bleedings from the arm,

proportionate to the age and general powers of the patient. In most cases, however, local abstraction of blood by leeches is found sufficient. When the complaint is chronic, as usually happens before the patient seeks advice, the authors have experienced little benefit from antiphlogistics, either general or local. In these cases they apply a plaster, composed of Burgundy pitch, mixed with four grammes of tartar emetic, to the sacrum, allowing it to remain eight or ten days. At the same time the patient is made to take warm baths, and to use astringent injections several times a day. If there be a copious discharge, proceeding from uterine catarrh, it must be combated by mild antiphlogistics, in addition to which the authors recommend a tincture of cubebs, of the strength of 60 grammes of the powder to 250 grammes of spirit. The dose a teaspoonful twice a day. If the discharge resists this treatment, they have recourse to cauterization of the interior of the cervix with the argenti nitras. The more obstinate forms of engorgement are treated by cauterization, either with the hot iron, or the solid Vienna paste. The mode of employing the latter caustic will be most readily understood by a perusal of the following remarks, which we extract from Dr. Henry Bennet's recent and valuable work on the subject of the present article:]

"If the Vienna paste is employed, the following is the plan pursued by M. Gendrin, which I likewise adopt. I must first, however, state that the Vienna paste, which is much used in France to produce deep eschars, is formed of equal parts of quicklime, and hydrate of potassa, reduced to a fine powder, and intimately mixed. The powder should be prepared only when wanted, and kept in a glass-stoppered bottle. To be used, it is made into a paste with a few drops of alcohol, and the paste is then spread over the part to be destroyed. Its action is very prompt, and accurately circumscribed to the part to which it is applied. A thin layer of the paste, for instance, will destroy the entire thickness of the skin in three or four minutes, and that with but little pain to the patient.

"When applied to the uterine neck, a large and conical speculum must first be introduced, and the engorged cervix made to enter its orifice; or should the cervix be too voluminous, the speculum must be firmly pressed on the part which it is intended to cauterize, great care being taken not to enclose between the rim of the speculum and the cervix, a fold of the vagina. About as much of the paste as will cover a fourpenny-piece, a line in thickness, must be placed on a triangular piece of diachylon plaster, one end of which is inserted lightly into the cleft extremity of a small stick. The caustic is then carried by means of the stick to the cervix, and applied to the centre of the part comprised within the orifice of the speculum. With long forceps, cotton is placed carefully all around the spot on which the caustic is applied, so as to completely protect the neighbouring parts. The stick having been withdrawn, the speculum is to be two thirds filled with cotton or lint, which is firmly pressed against the uterine neck. The speculum is then extracted, the cotton which fills it being forcibly pushed back in the vagina with the forceps, as it is pulled away, so that the passage remains thoroughly plugged. If all this be carefully done, it is impossible for the caustic to fuse, and to injure

the parietes of the vagina. In about fifteen or twenty minutes, the cotton or lint is to be gradually withdrawn by means of a bivalve speculum, and an eschar, the size of a shilling, will be found where the caustic was applied. The vagina should then be washed out with tepid water, complete rest in bed enjoined, and emollient injections employed until the separation of the eschar takes place, which is generally on the sixth to the eighth day."

[Dr. Bennet remarks, that this deep cauterization creates very little more disturbance of the system, than the superficial by the nitrate of silver. Inflammatory symptoms sometimes, however, arise, which require leeches, &c.: but to show how seldom this happens, Dr. Bennet states that he has seen every week, for three years, one or more patients thus treated, but that he does not recollect a single instance in which severe consequences ensued.]*

ART. 93.—*On the Management of Dystocia arising from Arrest of the Head in the Pelvic Cavity.* By EDWARD MURPHY, M.D., Professor of Midwifery at University College, late Assistant-Physician to the Dublin Lying-in Hospital.

(*Lancet*, July 12, 1845.)

[The observations which will be found below form a part of a valuable series of lectures upon the "Mechanism and Management of Natural and Difficult Labours." After describing the various causes of delay in the second stage of labour, whether depending upon the conformation of the child or of the mother, the author points out the danger which arises from the occurrence of inflammation of the uterine passages, and from *exhaustion* of the uterus; the latter of which conditions is shown to be very frequently misunderstood. Some remarks then follow upon the general treatment of protracted labours, after which the author enters upon the subject of arrest of birth from disproportion between the head and the pelvis, in these words:]

It is hardly necessary to state that there is every variety in the degree of disproportion between the head and the pelvis. In some instances it is so slight, that the woman may be safely delivered without assistance: in others the amount of difficulty may be so increased as to render it doubtful whether the head can pass without assistance; and it is in these cases that the rules of practice are the most contradictory. Again; you may have a still greater disproportion, in which there is no doubt about the improbability that the head can be expelled by the natural efforts of the uterus, although there is very great doubt, and no little dispute, as to the means by which the head must be extracted. Lastly, you have occasional instances in which the narrowness of the pelvis is such, or the magnitude of its distension so great, that the safe delivery of the child is hopeless; the head must be lessened; it must be destroyed before it can be brought into this world. In extreme cases of this kind, even this cannot be done, but recourse

* Practical Treatise on Inflammation, &c. of the Neck of the Uterus, p. 175.

must be had to the difficult and dangerous operation of removing the child from the uterus by laying it open, in order to save the mother from the dreadful alternative of dying undelivered.

In those cases of slight deviation from the standard pelvis, where there is every evidence of space sufficient for the head ultimately to pass through the pelvis, if nature be allowed time for the purpose, you would not, of course, interfere with her, although I believe instances might be quoted, where *very adroit operators* have, even in such cases, relieved the tedium of a long attendance by a ready application of the forceps. It is sufficient to say, that the united testimony of the profession, given in every standard work of midwifery, is opposed to such a practice, and if any accident should arise from this mischievous meddling, the operator is fully responsible for all the consequences that follow from it. But in those more doubtful cases, in which there seems hardly sufficient space for the head to pass safely through the pelvis, the practice is not so clear, nor is the evidence of the profession so unanimous on the subject. When, in such instances, the head is actually arrested, and so remains for some hours in the same position,—a sufficient length of time to satisfy you that the uterus cannot advance it,—if the ear can be felt, or the finger be passed easily between the head and the pubis, you may use the forceps to deliver the child, and I think the weight of authority will support your practice. But when the head is not so arrested, you have here the discordance of authorities at once confounding you. Burns devotes the greater part of a chapter (Burns, chap. vi, p. 428,) to prove the impropriety of delay under such circumstances, and advocates the application of the forceps in cases of arrest; because, "in such cases, then, we may experience much evil from trusting too long to nature, but add little to the sufferings of the patient, and nothing to her hazard by instrumental aid." He applies the same principle to cases of impaction, which we shall presently consider. The evil he dreads is uterine exhaustion, if this second stage be much prolonged. In this view he has the support of the late Professor Hamilton, who equally dreaded delay. Dr. Campbell also gives a similar opinion, but more guardedly expressed: "It may, however, be repeated, that while the delivery is advancing, and the patient continues free from unfavorable symptoms, the use of the forceps is to be abstained from altogether. *But whenever the progress is slow and imperceptible*, and the subordinate means already recommended have failed to accelerate the transit of the fœtus, the case should be watched, and *this instrument applied with very little delay after the passages are prepared.*" (Campbell's Midwifery, p. 281.) Other names might be added to this list of advocates for interference in the case supposed. But let us turn to the other side, and you will find the eminent names of William Hunter, Osborne, and Denman, opposed to this practice. Dr. Osborne would wait, till exhaustion had actually taken place,—a maxim for which he has been very severely, and, I admit, very justly criticised. Dr. Denman's fifth aphorism states: "It is meant, when the forceps are used, to supply with them the insufficiency or want of labour-pains, but *so long as the pains continue*, we have reason to hope they will produce their effects, and *shall be justified in waiting.*" (Denman's Aphorisms, p. 12.) When the pains cause the

head to advance, although very slowly, they are producing their effect, and the case therefore comes within the limits of the aphorism. Dr. Collins observes: "Let it be carefully recollected, at the same time, that so long as the head advances *ever so slowly*, the patient's pulse continues good, the abdomen free from pain or pressure, and no obstruction to the removal of urine, interference should not be attempted, *unless the child is dead.*" (Collins' Report, p. 18.) Dr. F. Ramsbotham's third rule on this point is: "If the head advance at all, and be not impacted, provided the strength and spirits are good, there is seldom need to interfere." (Ramsbotham's Obstetric Midwifery and Surgery, p. 309.) Dr. R. Lee's name might also, I think, be added, as being favorable to this rule of practice.

I shall not, gentlemen, so far trespass on your patience as to ask you to unravel with me this tangled web of contradictory experience. It is sufficient if I convince you of the difficulty of the subject, and if it induce you to give a patient attention to the only mode I can adopt to draw a legitimate conclusion: that is, to derive it as nearly as possible from facts; which I think may be done without reference to these opinions. Bearing in mind that the great and leading principle to be observed in these difficult cases is to preserve both mother and child, if possible, from injury, I think it is in our power to compare the results of cases where the forceps had been applied with those where they have been withheld, and thus determine the practice which presents the greatest success.

We shall first direct your attention to the following tables of Operative Midwifery, derived from reports given by British and foreign practitioners; you will find in them the total number of cases given by each, the number of forceps operations, and the results to mother and child, when they are given.

You will perceive that in these tables the number of forceps operations in British practice is 138; in 30 of which the child was still-born, being in the proportion of one in every fourth case. In order to prevent error in this proportion, we have separated Dr. Lee's forceps cases, the total number of which given by him is 55, the mortality of children is 38, which would be quite out of proportion (being more than one half), if these cases were not carefully examined. I have endeavoured to do so, and to make the necessary corrections. In 19 of these 55 cases, the forceps failed, they therefore became cases for perforation; of the remaining 36 cases, one half of the children, eighteen, were lost, but twelve of these eighteen were destroyed by other causes than the forceps. Deducting, therefore, all such cases from the whole number, the remainder will be 24 forceps cases, in which eighteen children were saved and six lost; being in the same proportion, one in four.

In the French Reports, forty-one children were lost in 173 forceps operations; being one in four, nearly.

Comparative view of Forceps Operations, and Perforations.

BRITISH REPORTS.

Date.	Place.	Name.	Total Cases.	Forceps.	Deaths. Children.	Deaths. Mothers.	Perforations.	Deaths. Mothers.	Total Operations.
1781 . . .	London	Dr. R. Bland	1,897	4	—	—	8	—	12
	Ditto . .	Dr. Merriman	2,947	21	6	—	9	—	30
1828 to 1843	Ditto . .	Dr. F. Ramsbotham	35,745	49	11	3	38	6	87
1787 to 1793	Dublin .	Dr. J. Clarke	10,387	14	—	2	49	16	63
1826 to 1833	Ditto . .	Dr. Collins	16,414	24	8	4	79	15	103
1835 to 1837	Ditto . .	Dr. Beatty	1,182	9	4	—	3	—	12
1835 to 1840	Ditto . .	Dr. Churchill	1,640	3	1	—	12	1	15
1832 to 1835	Ditto . .	Dr. Murphy	6,699	14	5	1	29	6	43
			75,911	138	35	10	227	44	365
	London	Dr. R. Lee		55	38	9	127	23	165

FOREIGN REPORTS. FRENCH.

1797 to 1811	Paris .	Boivin	20,357	96	23	—	16	—	112
1812 to 1820	Ditto .	Lachapelle	22,243	77	18	—	12	—	89
			42,600	173	41	—	28	—	201

GERMAN.

1821 to 1825	Wurtemburg	Rieeke	221,923	2,740	336	127	98	35	2,838
1801 to 1821	Vienna . . .	Boer	26,965	100	—	—	43	—	143
1797 to 1827	Ghent . . .	Jansen	13,365	341	—	—	5	—	346
1811 to 1827	Prague . .	Mosehuer	12,329	120	—	—	4	1	124
1815 to 1827	Bonn . . .	Kilian	9,392	120	—	—	4	—	124
1814 to 1827	Dresden . .	Caius	2,549	184	—	—	9	—	193
1817 to 1828	Berlin . . .	E. Siebold	2,093	300	—	—	1	—	301
1823 to 1827	Ditto . . .	Klugè	1,111	68	14	—	8	3	76
	Heidelberg .	Naegele	1,711	55	—	—	5	—	60
			291,438	4,028	650	127	177	39	4,205

In the German Reports of Rieeke and Klugè, which state the mortality of the children, the number of their forceps operations united is 2808, the deaths of children 650; being also one in four, nearly. Thus then we may eonclude, that one fourth of the children delivered by the forceps are lost. What is the result, when these protracted eases are left to themselves? Is the mortality increased? I do not think such will be found to be the case. In order to determine this question, I must refer you to Dr. Collins's valuable report—the only report which, from its extreme accuracy and minuteness, affords the elements upon which to form a caleulation. Dr. Collins has given tables to show the duration of labour in all the eases he reports; he has also given separate tables to show the duration of labour in foreeps eases, and in those which were preternatural. We may also assume, perforation being only had recourse to "when, after the most patient trial, the impraeticability of labour being terminated in safety by any other means was clearly proved," (Collins, p. 32,) that all these cases exceeded twenty-four hours. From these data, then, we shall endeavour to draw a fair eonclusion.

Cases of Labour protracted to twenty-four hours and upwards, from Dr. Collins's Report.

Total cases 430		Still-born Children 150		Mothers dead 40	
Preternatural cases	15	Still-born	6	Dead	0
Forceps cases	12	Ditto	4	Ditto	0
Perforations	79	Ditto	79	Ditto	15
	106		89		—
Delivered naturally	324	Ditto	61	Ditto	25

From this table you perceive that of 430 eases, in which labour lasted twenty-four hours, or exceeded it, 324 of them were natural eases, delivered without assistance, and that of these 324 the children were lost in sixty-one instances, which would be about one in five cases. The result of my own inquiries on this subject is nearly similar, and has been obtained from a similar source, the Dublin Lying-in Hospital. In 5599 cases, 218 were protracted to this degree; and of these, 175 were delivered naturally, and forty-one children were still-born; being one in four, nearly. Thus, then, you perceive that taking the widest, and, we would say, the fairest view of this question, the proportion of children in these difficult and protracted cases is nearly the same, whether the forceps be employed or otherwise; that the difference, if any exist, is in favour of Dr. Collins's practice, of leaving these cases to nature. But this is only one view of the question.

It may be said, and has been said, in the energetic language of Dr. Burns, that the mother must be considered. "From the strength of the recommendations of the partisans of nature, we should suppose that whenever the child could actually be born without aid, no hazard occurred; and, on the other hand, that instruments must of necessity

prove not only very painful in their application, but very dangerous in their effects. Now, the first supposition is notoriously wrong, for *innumerable instances* are met with, where the mother does bear her child, without artificial aid, and much, doubtless, to the temporary exultation of the practitioner, but, nevertheless, death does take place, or, at the best, a tedious recovery is the consequence." (Burns, p. 434.) Is such the case? It is totally contrary to my personal experience; on the contrary, I have been surprised at *the rapid* recovery of patients who have suffered this protraction, when I had erroneously anticipated, from that very circumstance, all the unpleasant consequences here detailed. But I would again ask you to put aside, for the present, individual experience, and examine facts. In doing so, our data are more limited than those which assisted us in the former question, because, in the French Reports, there is a most ominous silence regarding the mortality of mothers,—they say nothing about it. In the German Reports, we are limited to that of Dr. Riecke, who gives 127 deaths in 2740 cases; being one in twenty-one, nearly. But take Dr. Churchill's more extensive researches on this question, from whose valuable work on operative midwifery these tables of foreign practice are partly formed. He states, that "amongst the French and Germans, in 479 cases, thirty-five mothers were lost, or about one in thirteen." (Churchill's Operative Midwifery, p. 134.) Dr. Churchill gives the proportionate mortality in British practice as one in twenty-one; but you will perceive that, in the comparative view we have placed before you, there were 10 deaths in 138 cases, which is about one in thirteen. Compare this with the result where the cases have been left to natural efforts. In Dr. Collins's Report, there were 25 deaths in 324 cases, or one in thirteen; precisely the same as where the forceps had been used. Among those cases which I have observed, there were 8 deaths in 175 cases, or one in twenty-two,—a proportion in which I can place more confidence, because it is derived from personal observation.

With regard, then, to the second question, the mortality of the mother, take the estimate in any way you please, and you must arrive at the same conclusion; viz., that the mortality is certainly not increased when these cases are not interfered with, and all the dreaded consequences which Dr. Burns anticipates from such practice have no foundation in fact. But we might even go farther: we might even say, that so far from such evils following our practice, the evidence seems to point the other way, and to prove that the actual mortality is diminished. The twenty-five deaths reported by Dr. Collins, include cases of puerperal fever, and other causes of death which might be called accidental, because he gives, under a distinct head, the number of deaths the "effects of tedious and difficult labours." (Collins, p. 365.) These are just eleven cases; or one in thirty cases, nearly. The eight deaths which took place under my own observation, include three deaths from puerperal fever, leaving only five deaths from the severity and protraction of labour, which would be in the proportion of one in thirty-seven cases. Caution, however, is necessary, when we would derive a just conclusion from statistics. It is therefore possible, that if the reports of these forceps operations were more fully given, so as to sepa-

rate the deaths from accidental causes from those resulting from the operation, the proportion of mortality would be diminished in the same ratio. We do not wish you to assume more than what we think has been proved; viz., that the mortality of the mothers is not increased by leaving these cases to nature. The safety of the mother or the child cannot, therefore, be advanced as a reason for instrumental delivery, when the head is making a very slow but a certain progress.

One argument, however, has been much used by the advocates for interference, which is very clearly expressed by Dr. Burns. "Granting," he observes, "the recovery to be excellent, is it no consideration that the patient has been subject to twelve, perhaps twenty-four hours of suffering of body, and anxiety of mind, which might have been spared?" (Burns, p. 434.) You must perceive that, if this argument be worth anything, it will admit of a much more extended application than Dr. Burns would give it. It might be employed to justify the use of the forceps in every case where the head was within reach, and labour at all severe. Because, why should the patient be exposed to *any* bodily suffering or anxiety of mind, if it were in your power to relieve her of her miseries? On this principle the forceps might be used (as indeed they have been used,) in every tenth case, and the practitioner relieved from the most anxious portion of his duties. But the design of nature will not thus be thwarted, and we might reply to such an argument in the language of Naegele: "If we admit that proportionate difficulties, according to the constitution of each individual, and an effort of strength (requisite in childbirth,) are inseparable from the nature of this process, we must conclude, that *an abbreviation of this process, though performed by an able hand,* before the salutary change, on which the preservation of health depends, has taken place in the organization of the mother,—that a premature and sudden removal of these difficulties cannot be a matter of indifference; that such a violent interference with the functions of nature must incur the risk of destroying the health, though this should not ensue for some time after." (Naegele's Mechanism of Parturition, by Rigby, p. 88.) A more immediate injury, however, sometimes follows the application of the forceps in the case we are supposing, as well as in cases of impaction, which we have to consider. The pressure of the instrument may cause slough of the neck of the bladder or urethra, and thus establish a fistulous opening into the vagina; and the incontinence of urine that follows, renders the patient's life miserable afterwards. It is difficult, in all instances, to trace this accident to the use of the forceps. When a forceps case is described to us, we are seldom told that any mischief is the consequence. The splendour of success is very dazzling, and, while we admire the operation, we are too often left in the dark as to the rest. Nevertheless, I have been able to trace this accident clearly to the use of the forceps, in several instances. The usual account of the patient is, "that she had been delivered by instruments, and the child's life saved." Dr. R. Lee, in his "Clinical Reports," gives a candid and clear statement of the results in the forceps cases he details: "Four died from the rash and inconsiderate use of the forceps; seven had the perineum more or less injured; one had the recto-vaginal septum torn; five were left with cicatrices of the vagina, after sloughing; and one with incurable vesico-

vaginal fistula." (Clinical Midwifery, p. 32.) Dr. Collins records only *one case* of vesico-vaginal fistula in the whole of his report of 16,654 cases,—that was a case of perforation,—consequently this accident was never found among those cases which were delivered naturally. The only case of fistula which occurred in the 5,699 cases to which I have so often referred, was one in which I employed the forceps to deliver a child that presented the forehead. The principal cause of difficulty in Dr. Collins's cases was the large head of the male child forcing its way through a very osseous pelvis; the pressure on the soft parts must be very great, and if fistula could be produced by great protraction of labour in cases that ultimately were delivered without assistance, it must have been an accident of frequent occurrence in these cases, when the soft parts were so much compressed; but such did not happen, and therefore they afford a very favorable contrast to the cases delivered by the forceps in nearly similar circumstances. The intelligent practitioner would therefore hesitate before he exposed his patient to the risk of vesico-vaginal fistula, for the mere gratification of shortening the severities of nature.

We have reluctantly been compelled to dwell longer upon the management of this degree of disproportion than we desired. The difficulty of the question it involves, and the contradictions among the most experienced writers, must be our apology. In the case that we are considering, that in which the second stage of labour is protracted, and the head of the child advancing *very slowly*, we have shown you that there is no increased danger to the mother or child by leaving the case to nature, in place of delivering by the forceps; that if there be any difference in the ratios of mortality, it is in favour of non-interference, and rather against the forceps. We have pointed out, as far as imperfectly detailed facts would enable us, that the post-partum accidents of labour follow operations with the forceps more frequently than cases which are left to themselves, and, consequently, the conclusion at which we must arrive, is hostile to the use of that instrument, under the circumstances stated. But, recollect that there is no general rule without an exception; and you will sometimes meet with patients so feeble in their habits, that they will not endure a protracted labour, without great risk of exhaustion; you may be called to patients where you dare not temporize; whom you must deliver, although the head is making a tardy progress. We only ask you to consider these as the exceptions, not often met with, but still necessary to be studied and understood. It is for this reason we have brought before your notice the symptoms of exhaustion, and those which precede it; the same desire to direct your attention to the study of individual cases, which may be exceptions to the general principle we would wish to govern you, leads me to bring before you the varieties not only in the formation, but in the resistance of the pelvis, so that you may know where an operation might be undertaken, and where it cannot be attempted. If we have placed this subject before you with sufficient clearness, we shall conclude by directing your attention to that opposition in the practice of experienced authorities which has rendered its discussion so necessary.

Name.	Total Cases	Forceps.	Proportion, 1 in	Place
Ramsbotham	35,745	49	729	London
Clarke	10,387	14	742 nearly	Dublin
Collins	16,414	24	684 nearly	Dublin
Boivin } Lachapelle }	42,600	173	246	Paris
Boer	26,965	100	269½	Vienna
Bilian	9,392	120	78	—
Caius	2,549	184	14	Dresden
Siebold	2,693	300	7	Berlin

Ramsbotham, one forceps in 700; Siebold, one in seven cases.

ART. 94.—*On the Exhibition of Ergot of Rye in lingering Labour, and the Conditions for its safe employment.* By S. HALL DAVIS, M.D., Lecturer on Midwifery, and Physician to the Maternity Charity.

(*Lancet*, Oct. 11, 1845.)

[We have given in our First Volume, p. 173, the opinion of M. Parola, as to the conditions under which the exhibition of the ergot is salutary or pernicious; to this opinion we are now able to add the views of Dr. Davis, which, as will be seen, have for the most part a similar tendency. He considers that the following conditions should be present in order to render the exhibition of the medicine a safe proceeding:]

1. The soft parts should be lax, and free from heat.
2. With rare exceptions, the orifice of the uterus should be nearly fully dilated, and always dilatable.
3. The pelvic space should present the average dimensions.
4. In head presentations only; in breech and footling cases it is objectionable, on account of the very gradual descent of the presenting parts required for the subsequent passage of the head without risk to the cord. In transverse presentations it is obviously improper.
5. The head should be in an average good position, and not impacted.
6. The inertia of the womb should not have its source in plethora.
7. The absence of any source of irritation in any other organ capable of disturbing the parturient function by reflex action should first be ascertained, as of fæcal accumulation, urine in the bladder, or crude ingesta, which are to be met by their obvious indications of treatment.
8. The uterine inertia should be ascertained not to depend upon disturbance of the nervous functions, from loss of rest, or from depressing emotions.
9. There should not be present any cause of distension of the womb, beyond its power of acting to advantage, as by excessive quantity of liquor amnii or twins.
10. It would not be indicated when the inertia arises from constitutional weakness.

11. It is rarely advisable in primiparæ; much time and slower parturient action being required in these cases.

In short, this remedy being indicated on account of inertia of the womb, arising from the effect of previous distensions, there should be for its safe exhibition, a natural presentation, a wide pelvis, soft parts relaxed, nothing wanting, in a word, but efficient action of the uterus to finish the labour.

Art. 95.—*On Insuperable Rigidity of the Os Uteri.*

By John C. Lever, M.D.

(*Guy's Hospital Reports*, Oct. 1845.)

The present communication contains two cases in which labour was impeded by a rigid condition of the os uteri. The first was that of a female æt. 23, who had been in labour two days, when she came under the author's observation. She had been bled, and had taken nauseating doses of tartar emetic without benefit, and the os and cervix uteri had been rubbed with the extract of belladonna, with an equal want of success. At length, after a violent pain, the os and a very considerable portion of the cervix was expelled, in a condition approaching to gangrene. The fœtus was subsequently extracted by perforation. The after history of the unfortunate patient was that of severe constitutional disturbance, apparently depending upon purulent infection. The joints of the shoulder and elbow became suddenly painful and swollen, without redness, the pulse 136. She improved for a time, but had a relapse of the articular affection, and sank with typhoid symptoms. The second case was saved by incision of the indurated parts. The author proceeds to remark that there are many cases on record similar to the one first related, in which the os uteri has been torn off during the excessive action of the uterus, and mentions an instance which is reported in the 11th vol. of the Transactions of the Medico-Chirurgical Society of London, as well as three others, which are published in the 16th vol. of the Dublin Journal. The causes of the laceration are considered to be two-fold, first, the extreme rigidity of the os uteri, and, secondly, the pressure of the fœtal head upon the cervix, which, by impeding the circulation, induces a tendency to œdema and gangrene.

The treatment recommended by the author is that which was performed in the second instance, namely, division of the contracted os uteri. The directions for the operation are as follows: "The patient should be placed on her left side, in the usual obstetrical position, and brought to the edge of the bed; the fore-finger of the left hand should then, in the absence of pain, be passed to the part of the os uteri which is intended to be incised, and, if possible, its point should be slipped within; then directing a probe-pointed bistoury, or hernia knife, along the finger, we should wait for the occurrence of a pain, when the incision may be made by pressing the cutting edge of the instrument against the indurated margin of the os. The immediate effects of the incision will be the discharge of a small quan-

tity of thin watery blood, especially if much œdema of the cervix be present." Dr. Lever prefers the sides of the os uteri for the site of the incision, because there is less danger of wounding either the bladder or rectum than if the contrary direction were given to it.

The author condemns, in strong terms, any attempt to enlarge the constricted os by "artificial dilatation," as a proceeding which is very likely to induce inflammation, and even gangrene. He also warns us, on the one hand, against operating by incision before other more simple means for inducing relaxation have been tried, and, on the other, against waiting until the powers of life become exhausted, and the parts injured by long-continued pressure.

ART. 96.—*On the Treatment of Puerperal Convulsions.* By W. TYLER SMITH, M.B., London, Lecturer on Midwifery, &c. at the Charlotte street School of Medicine.

(*Lancet*, June 21, 1845.)

[Dr. Smith's views upon the pathology of puerperal convulsions have already been laid before the reader (vide Half-yearly Abstract, Vol. I, p. 169): we shall, therefore, on the present occasion endeavour to give a condensed account of the treatment which is likewise, as will be seen, founded upon principles derived from the study of the physiology of the excito-motory system of nerves. Dr. Smith observes, that in order to arrive at something like a systematic treatment of diseases of the nervous system, each part of that system must be dissevered therapeutically, as well as physiologically, from the others, for medicines have a very different effect upon each. An agent, for example, such as the ergot of rye, which increases the energy of the spinal system, as is exhibited in the augmented contraction of the uterus, has a contrary effect upon the ganglionic division, as is shown by its depressing effect upon the action of the heart; strychnia again operates powerfully upon the spinal system, leaving the cerebral intact; while conium, on the other hand, in poisonous doses affects both the spinal marrow and the brain, producing at once both delirium and convulsions. As the spinal system is that which is chiefly involved in puerperal convulsions, all remedies must be studied in special reference to spinal physiology and pathology. These remedies are divided by Dr. Smith into those which act upon the cerebral organ, the spinal marrow, and those which affect the extremities of the incident spinal nerves; the former class only are considered in his present communication.]

"*Bloodletting.* The action of bloodletting on the spinal marrow is greatly modified by the condition of the circulation. In fulness of the vascular system, it is the most powerful sedative of spinal action that we possess. Hence venesection is the grand remedy in the simpler forms of convulsion, where the disease depends on stimulation of the spinal marrow by excess of blood, or upon the mechanical pressure exerted upon that organ, together with the counter-pressure of the distended brain upon the medulla oblongata. In such cases bleeding alone will frequently be sufficient to subdue the disease, when the

fits come on before the beginning of labour, or after delivery. Another most important intention of bloodletting is to preserve the brain from injury during the convulsion. Besides the *primary* cerebral congestion, the original cause of the convulsion by its counter-pressure upon the medulla oblongata, the brain is exposed to the risk of fatal congestion or hemorrhage as a secondary effect, depending upon the compressing action of the convulsive fits upon the vascular system in general. As in the case of epileptics, women in puerperal convulsions frequently die of apoplexy, produced by the immense pressure exerted upon the cerebral column of blood during the fits. It is in a great measure from the effects of bloodletting in warding off accident to the brain that it is so universal a practice in this disease. The due recognition of the distinct operation of bloodletting on the cerebral and spinal systems is of the utmost consequence. In plethoric states of the system in this disease, it is *curative* in its action on the spinal marrow, preventive in its action on the brain.

"In the absence of definite ideas regarding the effects of bloodletting in this malady, it has often been pushed to excess, or been practised where it ought to have been avoided. In those cases in which *excentric* irritation exists as a complication of vascular excitement, repeated bleedings will fail to subdue the latter, unless the former be at the same time removed. Bleeding may in such cases diminish the impressibility of the *central* organ, rendering it less susceptible of the irritation of the *incident* nerves, but if it be persisted in without the previous removal of the irritation, it may become in the end positively injurious, by increasing instead of diminishing the excitability of the spinal marrow.

"In vascular plethora bloodletting is undoubtedly a sedative to the spinal system, but when the circulation is reduced considerably below par, loss of blood becomes an actual stimulant to that organ. Hence it is that those who have most pertinaciously followed bloodletting, have lost a greater number of patients than those who have been more cautious in this respect. The propriety and extent of venesection must be estimated, not by the violence of the disease, but by the state of the circulation in the intervals of the fits, and with especial reference to the different effects of vascular plethora and vacuity, upon the spinal centre. I should avoid these manifest repetitions, were I not thoroughly convinced that patients lightly bled in the first instance are frequently subjected to a repetition of the operation, until loss of blood itself becomes the cause of the final seizure.

"Similar remarks would apply to other parts of the common antiphlogistic regimen. Nearly allied in its *modus operandi* to bleeding are the effects of emetic tartar, which has been found so serviceable in the treatment of puerperal convulsions by Dr. Collins."

In the convulsions occurring in delicate anæmic women, bleeding is generally inadmissible, being, in fact, itself an exciting cause of the disease under such circumstances. Still, in cases approaching to this state, cautious bleeding may be necessary to preserve the brain from injury; but here venesection requires to be promptly followed by stimulants.

Dilatation of the glottis. During a convulsion the glottis is either

entirely or partially closed. The greatest authority on this point, Dr. Marshall Hall, questions if ever true convulsion can occur without this state of the glottis, and the cerebral and spinal congestion which it occasions. We know that an epileptic attack is sometimes prevented by the dash of cold water on the face or chest, so as to excite a sudden inspiration. Excitation of the incident nerves of inspiration in the same way, has been known to ward off the puerperal convulsion.

The application of cold to the head in the form of napkins, lightly wrung out of cold or iced water, or a full stream of water poured from a height, has become an approved remedy in puerperal convulsions, it therefore becomes an interesting question,—How does cold thus used act upon the nervous system? It may act as a sedative on the cerebral portion of the spinal marrow, or it may lessen the distended state of the cerebral circulation, and thus relieve the counter-pressure on the intra-cranial portions of the spinal system. Probably it acts in both of these modes. It may also tend to excite the inspiratory act, and thus open the glottis. The application of cold to the spine, as well as to the head, may hereafter be found beneficial in puerperal convulsions. The cold, however, must be cautiously applied, otherwise it would excite, instead of allaying, the irritability of the spinal system.

Administration of opium. It is highly necessary to ascertain the true effects of opium on the spinal marrow. One author maintains that it diminishes the contractions of the uterus in after-pains, another that it increases their energy. Some recommend it in uterine hemorrhage, as an efficient means of exciting uterine action, while some blame its use, on the plea that it produces uterine inertia. With respect to the propriety of its employment in convulsions, there is also a great discrepancy of opinion. Though we may not yet have sufficient data to form a perfect and decisive judgment, I believe we can at the present time make a considerable advance in the right direction.

[Dr. Smith, judging from its effects upon amphibia, is inclined to the belief that opium is a direct stimulant of the spinal system, in a plethoric state of the system, and that it is sedative in anæmia, wherefore it is, according to him, hurtful at the commencement in the majority of cases, and before a free bleeding has been instituted, but after this, and in anæmic cases, it may often be used with benefit.]

Emotion. The regulation of the emotions is of great importance in preventing the accession of convulsions when they are threatened, and in averting their return, on the intervals of *consciousness.* Mental excitement of every kind should be soothed, and as much as possible avoided. Perfect quiet, and the absence of all signs of excitement in the attendants, are of the utmost consequence. The effects of *psychical* agents upon the spinal marrow,—an otherwise purely *physical* organ,—is one of the most striking and indubitable facts furnished by the physiology and pathology of the spinal marrow.

SECT. II. DISEASES OF CHILDREN.

ART. 97.—*On Gangrenous Stomatitis.* By JAMES F. DUNCAN, A.M., M.B., Lecturer on the Theory and Practice of Medicine, Park street School of Medicine, &c.

(*Dublin Journal*, Sept. 1845.)

The subject which is found to be so ably treated, and of which the following remarks are an abstract, is one which has, within the last few months, been invested with more than ordinary interest, in consequence of several medico-legal investigations which have been instituted in cases of ulceration of the mouth, with the intent of affixing the charge of *mala praxis* upon the medical attendant. The similarity between the disease in question, and the sloughing which occasionally follows the profuse use of mercury, is sufficiently close to excuse the public in the error of confounding them. But it is full time that the profession should be better instructed in those distinctive marks, which, if rightly understood, will in all cases prevent misapprehension, and will enable them to rescue a brother practitioner from, in the great majority of cases of gangrene of the mouth, the unjust obloquy of having produced it by the injudicious use of mercurials. In furtherance of this object, the observations contained in the contribution of Dr. Duncan are some of the best we have met with.

This gangrenous ulceration of the cheeks and gums has lately appeared in an epidemic form in the establishment to which Dr. Duncan is attached, and, as will be seen, clearly depended upon an impaired state of the constitution, as the gangrene was not necessarily confined to the mouth, but in some cases attacked other mucous membranes, and particularly the pudendum. The ages of the patients varied from a year and a half to five years, and, in some cases, more than one member of the same family was attacked. The disease was usually preceded by a diarrhœa, a symptom which too often failed to attract attention, inasmuch as it was naturally attributed to the effects of dentition. "The children," observes Dr. Duncan, "did not at first seem to suffer from pain in the bowels, and could bear the usual amount of pressure without inconvenience. The alvine evacuations were either thin and watery, though not deficient in bile; or they were whitish and exceedingly offensive. In almost all cases blood was discharged, either in a fluid state or mixed with mucus. When these symptoms had continued for a few days, the mother would mention that the child had a sore mouth, and on examination it would be found that the gums were ulcerated, and the fangs of the teeth exposed." As the disease advanced, the gums became spongy, and bled upon slight pressure. In no case, however, did the teeth fall out. Death seemed to depend rather upon the high fever which accompanied the local affection, and the persistence of the diarrhœa, than to any changes effected on the condition of the mouth.

This condition of the gums presenting a certain resemblance to the effects of mercury, might easily lead to serious mistakes as to the cause of the affection. In the present case, however, the author does

not doubt the constitutional origin of the disease, as many of the children had been for months in the house previous to the attack, and had taken no medicine whatever; and as he had, moreover, been in the habit of exhibiting mercury freely in various infantile diseases, but had never witnessed the disease until the commencement of last winter. "Mercury," he observes, "so far from having a tendency to produce the disease, can be exhibited safely while it exists, and exerts rather a beneficial influence in checking its advance."

[In the diagnosis of this and the mercurial affection, the author thus remarks:]—

The importance, therefore, of establishing a correct diagnosis between this disease and the common form of mercurial ulceration of the mouth is self-evident, and as all the reasoning about to be produced in support of the opinion, that mercury is in no respect to be regarded as an exciting cause of the disease, applies with equal force to cancrum oris, I shall take the liberty of referring to it at some length. It may fairly be inferred that the two affections differ only in intensity, the infant constitution in the one case yielding to the violence of the fever, before the gangrene of the cheek has developed itself. Many persons believe that although some cases of cancrum oris occur, independently of mercury, the majority of those usually met with arise from the incautious use of this medicine, and that blame is, of course, to be attached to those persons who have been the agents of its administration. Were this opinion to be sanctioned by authority, we should be obliged to abandon the use of this valuable medicine under all circumstances, for as no one can discover, before-hand, the presence of the idiosyncracy which renders its use hazardous, the only alternative would be the total disuse of mercurial preparations on the one hand, or, on the other, the risk of occasionally producing this dangerous result. But if it can be shown that mercury has nothing at all to do with the disease, all this unpleasant apprehension will necessarily vanish."

"It is quite plain that, in order to sustain the opinion that mercury is the real cause of cancrum oris, it would be necessary to prove that it never occurs except in persons to whom that mineral has been exhibited, a proposition which is known to be decidedly erroneous. Many cases are on record, where it has been ascertained that not a particle of mercury has been used, either internally or externally."

[Although few medical men, perhaps, maintain that mercury is the sole cause of the disease, there are many who hold the intermediate opinion, that it may be so produced in certain constitutions,—the arguments with which such persons endeavour to support their opinions are principally derived from the situation of the affection, and the symptoms it produces. Dr. Duncan proceeds to examine their validity in these words:]

"In cancrum oris, as well as in mercurial action, we have ptyalism, fœtor of the breath, ulceration of the gums, and loss of teeth, but these symptoms, carefully inquired into, do not present the same appearances in the two cases. In the first place, the salivation of cancrum oris is moderate in quantity, and the fœtor of the breath does not pre-

sent the peculiar and characteristic odour by which we are enabled to recognize the incipient effects of mercurial action. But the ulceration of the gums is, perhaps, the most satisfactory proof, because, unlike the ordinary appearance of mercurial ulceration, it is confined to *a part only* of the alveolar process." . . . . . "Not to mention the extreme rarity of mercurial action in children, it is well known," as Marshall Hall observes, "that the effect of calomel, when it does take place, is *uniformly* diffused over the gums, the tongue, and internal parts of the cheek."

"The arguments therefore adduced in support of the opinion, that the development of the disease is due to the action of mercury upon an unhealthy constitution, are without force. It remains to mention those arguments which have an opposite tendency.

"In the first place, the disease in question is almost exclusively confined to children, who are, as is well known, scarcely at all susceptible of the ordinary effects of mercurial action; very few instances of ptyalism having occurred under the age of sixteen years. Cancrum oris, also, is a rare disease, while the use of mercurial medicines in infantile diseases is exceedingly common.

"Again, it is well known that the existence of fever is quite sufficient to prevent the usually physiological effects of mercury developing themselves, and that the manifestation of ptyalism indicates a remission in the violence of the constitutional disturbance. Now it has been observed by the best writers on this disease (cancrum oris) that it is always connected with this very state of the system, in which it is so difficult to salivate the patient.

"But perhaps the strongest argument in favour of this view is that which is derived from the effects of remedies. I have already stated, that if mercury be the exciting cause of the disease, it would be worse than useless to administer any of its preparations in the subsequent treatment. It is a remarkable fact, however, that many cases have been thus treated, not only without injury, but with marked benefit." Dr. Cuming, of Armagh (Dublin Hosp. Rep. Vol. IV), did not hesitate to use calomel as a purgative in these cases, and the author himself states that he has uniformly found mercurial purgatives preferable to any others in general use among children. [Other arguments in favour of the opinion that mercury is not the cause of gangrenous stomatitis, are based upon the fact that the gangrene in some cases attacks the pudendum and not the gums, in which case the mineral could not obviously be accused of the mischief. The paper is concluded by the relation of several highly instructive cases. The treatment confided in by Dr. Duncan consists in attention, in the first place, to the intestinal affection which precedes the gangrene. The cure of this is most readily accomplished by speedy and decided counter-irritation of the abdomen. The best internal medicine is acidulated decoction of bark, or infusion of calumba and nitric acid. To regulate the secretions hydr. c. creta, with Dover's powders is recommended. Wine was freely given in all cases. But little confidence is exhibited in local applications to the gangrenous parts.]

Art. 98.—*Gangrene of the Vulva in an Infant treated by the Actual Cautery:*—The subject of this case was of the age of two years, of the lymphatic habit, but otherwise in a healthy state. At the time that it was admitted into the hospital (Des Enfans Malades) it had a gangrenous patch on the inner side of the labia majora completely encircling the clitoris. No apparent cause could be discovered. The child had been tolerably well nursed, and did not appear in the least in a condition likely to give rise to mortification. When seen the next day, the gangrene had made considerable progress, wherefore M. Guersent determined to lose no time in the endeavour to check it. As an external application he touched the diseased part with an iron heated to whiteness; internally he exhibited wine and quinine. In spite of this treatment the sloughing gained ground, and a second and deeper cauterization was had recourse to. From this moment the disease was arrested, the eschar speedily detached itself, and disclosed a healthy granulating surface. The child continued the quinine for some time longer, and was discharged cured.

This form of disease is not uncommon in the crowded hospital for sick children in Paris, and like the canerum oris appears to depend upon a general vitiation of the fluids induced mainly by deficient ventilation; the action of the cautery was decided in this case.

Gazette des Hôpitaux, No. 66.

Art. 99.—*On Convulsions in Children.* By MM. Rilliet and Barthez.

(*Medico-Chirurgical Review*, Oct. 1845.)

[Infantile convulsions are divided by the authors of the 'Traité Clinique et Pratique des Maladies des Enfans,' into two classes. 1st. Convulsions without lesion of the brain, and sympathetic of disturbance in other organs; and 2d. Convulsions symptomatic of lesions of cerebro-spinal origin. It is a matter of considerable moment, to be able to pronounce to which of these two categories a given case belongs, as the prognosis in the two is widely different. MM. Rilliet and Barthez give the following rules for this purpose:]

"You are called to a child suddenly seized with convulsions. He is from one to six years of age, strong, robust, and fresh-coloured; the attack has followed a sudden fright, a fall, a blow, or an indigestion, i. e., some appreciable occasional cause. What is the affection he is suffering from? You are in doubt whether the convulsion is primary, sympathetic, or symptomatic, or whether it is not the prelude to epilepsy. If the child was quite well, if the determining cause is well made out, if the constitution is good, and the fit not violent, you may suspect that it is a sympathetic convulsion, or an attack of epilepsy. You examine with care the various organs, and after you have assured yourself that there exists no symptom of pneumonia, pleurisy, &c., you hesitate only between deciding it to be a convulsive or an epileptic attack, and are obliged to trust to the future for a solution of this doubt; acting, in the meantime, according to the urgency of the case. Suppose, at the time of the attack, the child was labour-

ing under severe disease, as pneumonia, pertussis, &c. In this case the convulsion is evidently sympathetic of the visceral lesion, is it at the same time symptomatic of brain disease? In the great majority of cases you may be certain that it is not so. The brain suffers sympathetically, and not from any disease of its own substance, which need cause any alarm. But this is a very different thing from saying that the convulsion is not dangerous.

"But it is quite different when the convulsions attack a child the subject of chronic disease. If you are informed that for weeks and months the child has been losing flesh and colour, has had a capricious appetite, irregular digestion, and vomitings; if you learn that its parents were phthisical, or that it has been exposed to the causes of tubercular disease; then, although the convulsion may even be the result of an appreciable occasional cause, you must fear that the attack is but symptomatic of some grave cerebral affection, and deliver an unfavorable prognosis accordingly.

"If the child is more than ten years old, the diagnosis is much easier; for it is very rare at this age for convulsions to be sympathetic or essential; and they are for the most part symptomatic of a disease of the brain, or constitute a first attack of epilepsy."

ART. 100.—*Treatment of indurated Tonsil Glands by Compression.* Professor Huss, of Stockholm, has employed the following method with success. He introduces the index-finger into the mouth, and compresses the indurated gland with its extremity for several minutes at a time. This is repeated three or four times a day. After some days of this treatment, the professor states that the gland becomes softer, absorption commences, and the surface of the tonsil is evidently relaxed and wrinkled. When this condition has been attained, stimulating gargles may be employed. The author remarks that this treatment should always be tried in those cases in which excision is contemplated.

Gazette des Hôpitaux, 94.

ART. 101.—*External Use of Digitalisin Croup:*—(M. Rudemacher, of Berlin, affirms, that in cases of croup (laryngismus stridulus?), when he has been unable to exhibit medicine by the mouth, he has derived benefit from the following prescription:

Extract of digitalis ʒ ij.
Lard . . . ʒ j. To make an ointment.

The throat is entirely covered with lint smeared with this preparation and frequently renewed. The suffocative paroxysms are stated to have been quickly relieved.

Ibid. 93.

REPORTS

ON THE

PROGRESS OF THE MEDICAL SCIENCES,

July—December 1845.

The intention of the following Reports is to pass in review the principal additions to each department of Medical Science, which have been placed on record during the preceding six months. It is not contemplated that they should be confined exclusively to the notice of what is new; any fact or doctrine which may be considered practically useful, will, although not strictly novel, be regarded as worthy of commemoration. It must be obvious to all who are aware of the immense mass of information which is almost daily put forth by the medical press of this and other countries, that the notice of every subject would be an impossibility. It therefore devolves upon the writers of each Report, to select only such articles for retrospection as may possess superior recommendations, either of an intrinsic character, or in relation to the main end and aim of all medical knowledge—the alleviation of suffering and disease.

I.

REPORT ON THE PROGRESS OF PRACTICAL MEDICINE, PATHOLOGY, AND THERAPEUTICS.

BY THE EDITOR.

[The figures in brackets refer to corresponding Articles in the Abstract.]

PART I. GENERAL PATHOLOGY.

§ I.—*Diseases of the Blood.*

1. *Spontaneous coagulation of the blood in the veins in the cachexiæ, and in various chronic diseases.*—The attention of pathologists having once been directed to the existence of fibrinous elots in the veins, as it occurs in phlegmasia dolens, it was not long before it was perceived that an affection of an analogous nature occasionally appears, not only in non-puerperal women, but under certain circumstances in the other sex also. This *non-puerperal* coagulation of the venous blood forms the subject of a very comprehensive essay by M. Bouchut,* the main points of which we shall endeavour to lay before our readers.

In detailing the history of the affection, the author does ample justice to the writings of those of his own countrymen who have preceded him, but among British writers, alludes only to Hunter, Abernethy, and Travers. To those he might have added the names of Dr. Robert Lee, who distinctly acknowledges the existence of a disease analogous to phlegmasia dolens, unconnected with the puerperal state, and of Dr. Bright, (Reports of Med. Cases, vol. ii, p. 63,) who in addition to this, traces the connexion between the disease and a cachectic state of the system, which is indeed the direct object of the author's present communication. The matter contained in the memoir of M. Bouchut is thus distributed. The first chapter contains a record of the cases upon which his opinions are based, the second a description of the anatomical characters of the disease; in the third, are described the symptoms which announce the coagulation of the blood; the fourth, fifth, sixth, seventh, and eighth, are occupied with the progress and termination, the diagnosis, prognosis, causes, and treatment, of the disease respectively.

The cases alluded to were as follows:—Three phthisical women in the last stage of marasmus; a woman labouring under calculous nephritis, with

* Gazette Médicale, Nos. 16, 17. 1845.

destruction of the tubular structure of the kidney; a man affected with encephaloid disease of the liver; a female greatly reduced by typhoid fever; a boy ill with a severe burn; and some others, each of whom, from various causes, were suffering under great prostration of the vital powers.

The most common seat of the coagulation is in the veins of the lower extremities; but it sometimes, though more rarely, occurs in those of the arms and neck. It is found also occasionally in the sinuses of the brain, as observed by Abercrombie; and in the pulmonary arteries, and in the veins of the liver, as described by MM. Bouillaud and Baron. The inferior extremities, however, are so much the most frequent seat of the disease, that it occurred in that situation in 44 cases out of 51 observed by M. Bouchut. The author mentions, as a remarkable fact, that the veins implicated are usually those the most distant from the organ chiefly affected by the disease, which gives rise to the cacheetic state of the system; he does not deny, however, that in tubercular phthisis and in cancer, the smaller veins in the immediate neighbourhood of the diseased structure may become obstructed by coagula. The extent of the coagulum varies in different cases, but is, as a general rule, regulated by the locality at which the collateral veins originate. The coagulum first appears in the form of a dark clot, which takes the shape of the vessel, but does not adhere to its inner coat. When adhesion does take place, it is supposed by the author to be due to a secondary phlebitis, set up by the irritation of this clot, but in no case does he believe that the coagulation originates in inflammation in the first instance. After an interval of fifteen or twenty days, the coagula lose their colour, and become tough and consistent, and in some cases even of cartilaginous or calcareous hardness.

The symptoms which announce the coagulation are strictly local, and unconnected with the cachexia or chronic disease, in the course of which the phenomenon arises. The patient experiences pain in the thigh or ancle of the affected limb, which pain is in the course of a few days followed by œdema. The skin is of a dull white colour, as in puerperal phlegmasia dolens.

The diagnosis is founded upon the occurrence of sudden pain in the limb, in the latter stages of a chronic malady, and the rapid supervention of œdema; in such a case M. Bouchut considers that obliteration of the vein may be confidently pronounced to exist.

The prognosis is not unfavorable as far as the local affection is concerned; the danger is entirely dependent upon the anterior condition of the patient. It must inevitably be considered a serious complication when it supervenes in the latter stages of phthisis or cancerous disease, and, under such circumstances, indicates the near approach of a fatal termination. In more favorable cases, either the vein itself becomes pervious by the absorption of the coagula, or, as is more frequently the case, the circulation is maintained by the enlargement of the collateral veins.

In the treatment of this affection, M. Bouchut discountenances depletory measures of all kinds, but trusts entirely to narcotic fomentations, and the internal exhibition of opium.

It has been mentioned in the course of the above imperfect sketch of M. Bouchut's memoir, that Bouillaud and Baron had observed the spontaneous coagulation of the blood in the pulmonary arteries; we may further state that Mr. Paget* has paid considerable attention to the same lesion,

* Medico-Chirur. Transactions, vol. xxvii, and Meeting of the Medico-Chirurgical Society, June 24, 1845.

but without laying any stress upon its alliance to cachectic states of the constitution. The conditions under which the latter gentleman has noticed it, are principally four:—first, in pulmonary apoplexy; secondly, in the advanced stage of pneumonia; thirdly, when the matter of medullary cancer passes into the blood, and becomes arrested in the lungs; and fourthly, in cases of extensive pulmonary œdema.

2. *Suppuration of the blood.—Purulent infection:*—The presence of pus in the blood, gives rise to a train of symptoms of so fatal a nature, and at the same time so surrounded by obscurity, that any communication tending to advance our knowledge upon the subject, cannot fail to be of considerable interest. Of this character is an essay by Dr. H. Bennet of Edinburgh, which appears in the 'Edin. Med. and Surg. Journal,' of October 1845. The purulent contamination of the blood here referred to is noticed in connexion with chronic disease of the spleen, two cases of which are related. The first case is that of a man æt. 30, who was admitted into the Royal Infirmary with enlarged spleen. There was little disturbance of the system in the first instance, but, about the fifth day, febrile action ensued, with headache and diarrhœa, and the man died suddenly. After death, in addition to the enlarged spleen, the blood was found to be much altered in character, being coagulated in the principal venous trunks; and exhibiting a mixture of a whitish substance, apparently either lymph or pus. The lining membrane of the veins did not exhibit any perceptible alteration, as would have been the case had the coagulation depended upon phlebitis; neither were there any purulent depôts in various parts of the body, as is usually seen when the pus has gained admission into the circulation by absorption; for these reasons Dr. Bennet, who has reviewed the case in connexion with another occurring under similar circumstances, regards it as an instance of true suppuration of the blood. The *à priori* view of the case, as is indeed allowed by Dr. Bennet, tends rather to the belief that the whitish substance described is the softened fibrine described by Gulliver, or the same material existing in connexion with coagulation, of the nature above described by Bouchut; a view which would be strengthened by the fact that although the precise office of the spleen in sanguification is not decided, disease of that organ is known to be almost invariably followed by a peculiar cachectic state of the system. The evidence, however, adduced by Dr. Bennet in proof that the globules were in reality those of pus, is sufficiently strong to induce us to coincide with him in the present instance. The point mainly depends upon the question whether pus can be formed in the blood independently either of inflammation, or of absorption from purulent depôts. Dr. Bennet says that it can, for as pus-globules arise in a blastema formed in the liquor sanguinis, he sees no reason why they should not arise in the vessel as well as out of it, if any circumstance should arise which determines the separation of the serum from the more solid constituents of the blood.

3. In connexion with the formation of the disseminated abscesses seen in the lungs, liver, and other organs, as a sequel to purulent infection, we find some valuable remarks in a recent and most talented work on the Diseases of the Liver, by Dr. George Budd.* It is a commonly received opinion that the pus found in these organs is not the product of local inflammation, but that it is all brought with the blood from the spot at which the primary suppuration took place, (as in the veins of the diploë for in-

* On Diseases of the Liver. London, 8vo, p. 53.

stance,) and is merely deposited in the spots in which it is found. Dr. Budd objects to this opinion for the reason which appears sufficiently forcible, that pus-globules being twice as large as the blood-globules, they could not escape bodily from the blood-vessels without the blood escaping as well. He alleges also in support of his opinion, the researches of Dance and Cruvcilhier, which show that although fully formed abscesses are generally found in the lungs in the cases in question, yet that in some instances in which death occurred earlier, smaller hepatized spots, or in other words an earlier stage of inflammation, are seen to occupy the site of the small collection of pus. From these and similar observations, Dr. Budd considers it "established that the abscesses which form in the liver and other organs after surgical operations and injuries, are owing to suppurative inflammation of a vein, and consequent contamination of the blood by pus. The globules of pus mingled with blood are conveyed to the capillary vessels of the lungs, and by becoming arrested, there excite circumscribed inflammation and abscess."

4. *Purpura.*—The profession appears to be much divided in opinion, if we may judge by a late discussion upon the subject at the London Medical Society,* as to the pathology of purpura. The majority having regard to the analysis of the blood in this disease by Becquerel and Rodier, (vide Half-yearly Abstract, Vol. I, p. 330,) will doubtless consider that it mainly depends upon a deficiency of fibrin.† Some are, however, disposed to view it as occasionally a local disease. Dr. Rees believes that like Bright's disease, purpura consists of two stages, the one exhibiting a superabundance of fibrine, the other a deficiency. In the treatment of the profuse hemorrhages which sometimes occur during the progress of the disease, turpentine is highly spoken of by Mr. Headland‡ and Dr. Neligan,§ and ergot of rye by Dr. Ross‖ of Boulogne.

5. *Effect of hydropathy upon the blood.*—A German physician, M. Albert,¶ who has had ample opportunities of witnessing the operation of the water-cure, has remarked that persons who have pursued the system uninterruptedly for two or three months, are apt to acquire a habit of body not dissimilar to that of scurvy. The pulse becomes accelerated, soft, and feeble. The patient is subject to palpitations and a continual feeling of lassitude, and eventually suffers from spongy gums and apthous ulcerations of the interior of the lips and cheeks. From these symptoms M. Albert concludes that the immoderate use of water has a tendency to impoverish the blood.

6. *Anemia.*—M. Beau endeavours to point out a distinction between anemia, more properly so called, arising from an absolute deficiency in the quantity of blood, and that condition of the circulating fluid which consists not so much in a diminution in absolute quantity, as in a relative increase in its watery constituents. In the first, which follows immediately upon direct loss of blood, there is pallor and feebleness, but the pulse is small, and no arterial *bruit* is heard. The latter, to which he gives the name of *polyhæmie sereuse* is generally consequent upon the other, and depends upon an abundant ingestion of liquids, called for by the urgent thirst. This form of anemia does not in general declare itself until the fourth day after the loss of blood; and may continue for an unlimited time. In this,

* Lancet, Oct. 25.

† See a Paper by Mr. Close of Manchester, Med. Times, Oct. 25, 1845.

‡ Lancet, Oct. 25, 1845.

§ Dublin Journal, Nov. 1845.

‖ Lancet, Oct. 25, 1845.

¶ Medicinische Correspond. Blatt.

as in the former case, there is pallor and debility, but the pulse is even more developed than before the hemorrhage; and an arterial *bruit* becomes very distinct.*

A case in which death was produced by anemia, is related by Mr. Pearce.† The fatal event being attributed to coagulation of the blood in the sinuses of the brain. The patient was suddenly seized with acute pain in the head, followed by convulsions and coma. It is to be regretted that this case loses much of its value in a pathological point of view, from the want of a post-mortem examination; it is, however, worthy of attention, inasmuch as it may put us upon our guard with respect to the prognosis of these usually simple cases. That the supposition of Mr. Pearce, as to the immediate cause of death, is supported by experience, is shown by Dr. C. J. B. Williams, who records three cases in which coagulation in the cerebral sinuses was found after death, under similar circumstances. It is also countenanced by the researches of M. Bouchut, to which we have above alluded.

7. *Effect of disease upon animal temperature.*—Although the records of medical science include many isolated groups of experiments upon this interesting subject, a well-digested and at the same time extensive series of investigations is still a desideratum.‡ In as far as the reunion of partial observations may ultimately tend to the acquisition of definite ideas on the point in question, we are indebted to M. Roger, who has carefully studied the effects of disease upon the development of animal heat in children. This pathologist has found, as one result of his observations, that although in adults the temperature of the body in disease fluctuates through a range of only 7° cent., in children it varies as much as 19°. The highest temperature observed by him was 42° cent., and occurred in typhus, pneumonia, and meningitis. Among the practical deductions which he has proposed is the one that typhus may be diagnosticated to a certainty if the temperature of the body reaches 40°, the pulse at the same time not surpassing 100. In all other diseases in which the same degree of heat exists, he declares that the pulse is considerably quicker. It is more common for the temperature to exceed the physiological level, according to the author's remarks, than to sink below it. The latter is, however, seen to occur in paralysis, gangrene, cholera, and in the cold stage of intermittent fever. We may remark that the latter observation is directly opposed to the opinion of Andral, who found the temperature to rise from 2 to 4° in the cold stage. The disease which exhibits the greatest fall of temperature in children, is the œdema of the cellular tissue. This disease is, according to the author, to be apprehended when the thermometer points to 36° cent., it may be considered as established if it marks as low as 30°. We give these results of M. Roger as we find them, they are obviously too meagre to allow of implicit confidence.§

§ II.—*Zymotic Diseases.*

8. *Fever.—Typhus and typhoid.*—The French Academy has for a considerable period since the date of our last Report been occupied by discussions respecting one or two points of great importance in the pathological history of fever. The questions of essentiality or non-essentiality,

* Archives Générales de Médecine, Août, 1845. † Lancet, June 7, 1845.

‡ Since the above was written, Dr. Hake has published two papers upon the subject in the Med. Gazette (Nov. 14), but has not as yet attempted any analysis of his facts. § Archives Générales de Méd., and Lancet, Aug. 9, 1845.

of its dependence or non-dependence upon inflammation of the Peyerian glands have at length ceased to be agitated, and in their place we have that of the identity or non-identity of typhoid with typhus fever, and of its contagious nature. The discussion on these points originated in the presentation of a memoir by M. Gaultier de Claubry,* in which both propositions were distinctly affirmed. M. Rochoux who opened the debate which ensued, denied the identity of the two diseases, on these several grounds. 1. That typhus was contagious, typhoid fever not so. 2. That the former attacks at all ages, the latter rarely occurs before 15, or after 40. 3. That the peculiar delirium and eruptions of typhus are not observed in typhoid fever; and lastly, that the duration of the two affections is different, being in the one case from ten to fifteen days, in the other, from twenty to thirty.

This confessedly intricate question is extremely well reviewed by a writer in the Dublin Journal,† who discusses the objections of M. Rochoux seriatim, after the following manner:—

The first point of difference which M. Rochoux seeks to establish, is the circumstance of contagion. This argument the author of the article alluded to shows to be of little value, as the typhus of Ireland is not always contagious, any more than the typhoid fever of Paris. As a proof of this, he states that out of 9·588 cases of fever admitted into the Belfast Hospital no trace of contagion could be discovered in 2·342.

A second ground of distinction much insisted upon is the different ages at which the two diseases occur. This is opposed by the author for two reasons: 1st. That much error is committed in estimating age, from the omission to notice the fact, that as it is the custom for the youth of both sexes to congregate in Paris from all parts of the French dominions, the majority of patients of all classes must necessarily be near the age of puberty. 2d. That the reason why typhoid fever is said never to occur in children, is that the French pathologist is apt to deny the existence of the disease, unless he has an opportunity of seeing the diseased bowels, which, as children comparatively speaking seldom die of fever, he has but little opportunity of doing. But, as the author observes, the objection is completely reversed by the fact, that cases are on record in which the rose-coloured spots of fever were visible even at birth. On the other hand he remarks, that the true typhus of Ireland is equally rare among children with the typhoid fever of France, and equally uncommon among aged persons, since of 11·209 cases admitted into the Belfast Hospital, 301 only were under 6 years of age, and 171 only were over 60. The other objections of M. Rochoux meet with the same opposition at the hands of the author, who therefore concludes that there are no just grounds for regarding the two diseases as distinct affections, but that the most which can be said is that they are varieties of the same type of fever.

The contagiousness of typhoid fever asserted by M. Gaultier de Claubry is likewise maintained by M. Jacques,‡ and by M. Patry,§ the former of whom affirms that the disease never quits a house until every person has been attacked who is predisposed; and that it is extremely rare to see the inhabitants of the same lodging, down with the fever at separate times, with an interval of more than a fortnight, the usual limit of the period of incubation.

* Revue Médicale, and Archives Gén. Juillet 1845.
† September, 1845.
‡ Reported in Archives Gén. de Med. Août 1845.
§ Gazette Médicale, No. 21. 1845.

In the treatment of fever we gain but little information from the writings of the last few months. The plan pursued by M. Jacques, is the combination of emetics and purgatives, with the constant application of cold to the head and abdomen. The same treatment is likewise recommended by Professor Huss,* with the addition of frequent ablution with chlorine water, and the exhibition of opium, musk, and phosphoric acid. The latter medicine was found particularly serviceable in the adynamic forms of the disease, and it is somewhat remarkable that the professor takes the same symptom as an indication for the employment of this medicine, which is mentioned by Dr. Graves as indicating the necessity for wine, namely, a feebleness of the first sound of the heart, and its approach in character to the introduction of the second sound.

9. *Typhus material.*—It is a favorite theory with the German physicians, that during the progress of typhus fever, a certain morbid material said by Rokitansky to resemble medullary sarcoma is poured out from the blood into the texture of various organs. Vogel† among others, has paid much attention to the point, and has published observations which have recently been translated by our talented reporter on anatomy and physiology, Mr. Kirkes. It would seem that the parts most liable to become the seat of the above-mentioned material are the mucous membranes, but it may also appear in the substance of the denser organs. The action which precedes the deposition of the typhus material, is said to be inflammatory, and to affect especially the solitary and aggregate glands of the small intestines. The most important transformation undergone by the typhus material after its deposition is its conversion into a brownish slough, which upon separation leaves the typhus ulcer. The material examined by the microscope is seen, according to Vogel, to consist of an amorphous granular product of a brownish-white colour, and containing cells of 1-300th of a line diameter; some nucleated.

The subject of the typhus material has also been taken up by Engel.‡ This author has observed it under two forms, a fluid and a solid, usually combined; the fluid matter is viscid and opake, and when allowed to rest throws down an abundant sediment of epithelial cells and phosphate crystals; the solid matter, as observed by Vogel and Rokitansky, is chiefly found in the intestinal follicles. The process of ulceration and reparation are faithfully described by Engel, as well as certain anomalies to which the diseased product is occasionally subjected; for a detailed description of these, we must refer the reader to the original.

10. *Yellow fever.*—The pathology of this severe malady, which has lately been invested with unusual interest from its appearance on our own shores, is ably treated of in a communication from the pen of Dr. Nott§ of Mobile, giving the particulars of several epidemics witnessed by him in that locality. In seeking to determine the nosological status of this fatal disease, he comes to a conclusion, of the truth of which little doubt can be entertained, namely, that it is a special fever, and like other fevers, subject to considerable variations in its leading characters, according to the local or individual circumstances under which it arises. The author eulogizes, as every candid reader must do, the philosophical researches of Louis upon the disease as it occurred in Gibraltar, but finds it neces-

* Gazette Médicale, No. 21.

† Erlauterungstafela zur Pathologischen Histologie, and Med. Gazette, Oct. 31.

‡ Schmidt's Jahrbucher, No. 7. 1845, and Med. Gazette, Oct. 31.

§ American Journal of Medical Sciences, April 1845.

sary to differ from him in some particulars. Louis, as may be remembered, considers the leading characteristic of yellow fever to be a "peculiarly anemic and friable condition of the liver, giving to it the colour of butter." This appearance was not found by Dr. Nott as a general rule, being present in only one third of his cases. It may be observed, however, that Dr. Imray,* to whom we are also indebted for an essay on the fever in question, sides with Louis.

Dr. Nott has examined with great minuteness the condition of the blood and secretions in yellow fever. As in other fevers, the blood was found to be dark and grumous, and exhibited but little disposition to coagulate. The peculiar and fatal symptom, the black vomit, is decided by actual experiment to be blood, modified by admixture with the acids of the stomach.

The causes of yellow fever are discussed both by Dr. Nott and Dr. Imray; the former, however, goes no further than to admit, what cannot in the present day be doubtful, that it is a poison which by some means or other gains admission to the blood, and then propagates itself by zymotic action. He does not pretend to decide whether the poison is of animal or vegetable origin. Dr. Imray examines the question upon a more extended basis, and discusses the opinion held by some that the exciting cause is of malarial origin, differing only from that which originates the intermittents and remittents of tropical climates, in the degree and concentration of its effects. He considers this opinion to be a fallacy, since there are many localities, as the islands of Dominica and S. Lucia for instance, in which circumstances necessary to the development of malaria exist in a high degree, without the production of yellow fever, while, on the other hand, in the neighbouring island of Barbadoes, to which intermittent fever is comparatively a stranger, yellow fever forms a fearfully large item in the bills of mortality. Another reason which he considers to militate against the identity in origin of yellow with intermittent fever, is the fact that the former does not appear to be influenced either by season or temperature, being equally rife in wet seasons and dry; when the temperature was high, and when it was low. In this he is quite borne out by the observations of Rufz.†

11. *Intermittent fever.*—M. Piorry has lately adopted the strange opinion that ague is not, as it is generally held to be, the cause of the enlarged condition of the spleen with which it is associated, but on the contrary, that the hypertrophy of this organ is the exciting cause of the febrile paroxysm. True to his belief, he has lately recorded a case which proved rebellious to quinine, and which was at length cured by the application of a bandage preventing the descent of the enlarged spleen. The paroxysms are supposed by him to depend upon traction exercised upon the splenic plexus of nerves.‡ At a late meeting of the Academie de Medicine,§ M. Savielle denied the influence of miasmata in the production of intermittent fever, and attributes the disease to the sole agency of cold and damp; the opinion, as might be expected, met with decided opposition from the majority of the members present. In the treatment of ague, M. Trousseau|| advises the exhibition of quinine in a single large dose, rather than in repeated small doses; he states that he has known an

* Edin. Medical and Surgical Journal, Oct. 1845.

† Gazette Médicale, No. 37, et seq. ‡ Gazette Médicale.

§ France, Sept. 16, reported in Med. Times, Sept. 27, 1845.

|| Journ. de Méd. Mars 1845.

obstinate case which had resisted an ounce of quinine given in the ordinary way, to yield at once to a single dose of fifteen grains. The same opinion as to the efficacy of large doses, it may be remarked, is held by Dr. Elliotson, (vide Watson's Lectures, vol. i, p. 747,) and has recently been acknowledged by Dr. Chambers,* of Colchester. The Achillea millefolium has also recently been employed with success as a substitute for quinine by an Italian physician.

12. *Measles.*—The only communication of interest upon this subject, is one by Dr. Battersby,† containing the description of an unusually severe epidemic which occurred in the South Dublin Union Workhouse, at the close of the last year. This epidemic was remarkable for the frequent supervention of various untoward complications, the principal of which was a diptheritic inflammation of the fauces, mouth, and larynx, accompanied by pneumonia, which latter affection was in the majority of fatal cases the immediate cause of death. The diptheritic affection, according to the author's experience, was not in itself a formidable symptom. In another class of cases, a severe diarrhœa, with bloody stools, frequently appeared about the decline of the eruption. It was readily controlled if un connected with pulmonary complication.

In the treatment of the majority of the cases which occurred during this epidemic, general bloodletting is described as being inadmissible, whatever might be the local complication, but in some instances leeches were employed with advantage, as were also warm baths, and counter-irritation with the local application of nitrate of silver in solution to the fauces.

13. *Syphilis.*—M. Cullerier‡ has lately performed a series of experiments in order to determine the inoculability of the lower animals, with the syphilitic poison. The result of repeated trials upon monkeys, guinea-pigs, &c. appears to be that the disease in question is confined to the human race, as in no instance was the experimenter enabled to communicate the disease.

14. *Vaccination.*—Several communications on various points connected with vaccination have recently been put forth. One of these is a work by Sir Matthew Tierney, entitled 'Observations on Variola Vaccina or Cow-pock;' another to which we may refer, is an excellent Report on 'Small-pox in Calcutta,' and 'Vaccination in Bengal,' by Dr. Stewart,§ M. Blouqier‖ also has investigated the subject with respect to the age at which it is most safe to vaccinate an infant. It seems that in France the operation is considered dangerous in very tender infancy. M. Blouqier therefore writes for the purpose of convincing his countrymen that there is no risk even in the first week, but on the contrary, that the younger the subject, the less the disturbance of the system. The most interesting information however, coming within the period of our Report, is contained in the Report of M. Serres upon the memoirs which were presented to the French Académie des Sciences, in competition for the vaccination prize offered by that learned body. We regret that our space will not allow of an analysis of the entire article, we shall therefore be content with presenting an abstract of the principal conclusions to which the various memoirs tended. These are as follows:—

* Provincial Medical Journal, Oct. 29. † Dub. Journ, Sept. 1845.
‡ Archives Générales de Médecine, Mai 1845.
§ Reviewed in Medico-Chirurgical Review, Oct. 1845.
‖ Encyclographie Médicale, Avril 1845.

1. The preservative power of vaccination is absolute in the majority of cases; it is temporary in comparatively few, and in these it is almost absolute until puberty.

2. Smallpox rarely attacks vaccinated persons before the age of ten or twelve years.

3. Independently of its preservative virtue, vaccination introduces into the organization a principle which has the property of diminishing the virulence of the symptoms and shortening the duration of the disease.

4. Inoculation direct from the cow gives rise to symptoms of great intensity, but it is more certain than vaccination with the ordinary virus.

5. The preservative virtue of vaccine does not appear to be proportionate to the violence of the local symptoms, but it is nevertheless advisable to renew the virus after a certain period.

6. Among the means proposed for this renewal, the only one worthy of confidence consists in taking the virus from its original source, the cow.

7. Revaccination is the only method by which the properly vaccinated can be distinguished from those who are not safe.*

8. The success of a revaccination does not necessarily prove that the party would have contracted smallpox; only that such an event was probable.

9. In ordinary times persons should be revaccinated at the end of fourteen years, but the operation should not be so long deferred during the existence of an epidemic.†

§ III.—*Accidental Productions.*

15. *Accidental productions in general.*—M. Baron‡ in continuing his researches upon the nature and mode of development of the various accidental formations to which the human body is liable, has arrived at a conclusion, which the growing confidence in the truth of the "cell theory," renders less remarkable, namely, that they are all identical in origin. The reasons upon which he founds this proposition are, the frequent similarity of anormal tissues; the mutual transformations which they undergo; their simultaneous appearance, analogy of structure and development; their analogy of seat; the similarity of symptoms, progress, and termination of the diseases to which they severally give rise, and lastly, their identity in chemical composition. In seeking to establish the proximate cause of the various forms of accidental tissue, M. Baron differs both with Trousseau and others, who attribute them to a low form of inflammation, and also with Cruveilhier, who considers them to arise in a phlebitis of the part in which they are seen. The opinion to which he leans, is that which has long been maintained by Andral in respect of tubercle, that they originate in a perverted action of ordinary nutrition; by which instead of the development of a normal cell, one is formed which is disposed to go through the various phases of diseased development seen to exist in the different varieties of accidental tissue. The diseased cell is considered by the author to be in the initiatory stage identical in every species of morbid development,

* It may here be remarked that the value of revaccination, except as a test of a former operation, is denied by Mr. Newnham of Farnham, in a paper lately published in the Medical Gazette, Oct. 17.

† Bulletin des Acad. Nos. 7, 8, and 9. 1845.

‡ Gazette Médicale, Mai 1845.

whether it be cancer, melanosis, tubercle, false membranes, hydatids, &c. What the principle is which impresses upon this cell the peculiar characteristics of the individual structure to which it is destined to give rise, he does not pretend to decide. The remote cause of all accidental formation is attributed to some inappreciable modification of one or more of the constituents of the blood.

16. *Cancer.*—Some observations on the microscopic anatomy of cancer, are to be found in the 'Medical Gazette,' of September 1845, which are extracted from a recent work by Vogel. These are not, however, of importance, as they add little or nothing to our previous knowledge of the subject. The frequency with which cancer displays itself at different ages, and in the two sexes, is investigated in a short communication by Mr. Wilkinson King,* being the result of post-mortem examinations made at Guy's Hospital. If any facts were wanting to show the danger of a too implicit reliance upon the "numerical method," the following conclusions might we think be adduced. Mr. King finds that half of the number of females dying at or about the age of 44 years, are the subjects of cancerous formations; of males dying at the same age, one eighth are similarly affected. He also states that in both sexes cancer increases in frequency from youth to the age of 44, and then decreases.

A few interesting cases of cancer of various organs have been recorded within the period of our Report, which will be noticed under the section on special pathology.

17. *Tubercle, presence of, in different organs.*—The following is a condensed summary of a valuable essay for the details of which we refer the reader to Art. 26.

"In 152 autopsies of adults affected with tubercles, M. Cless† found the lungs free from tubercles six times. In 2 of these 6 cases, the peritoneum was sprinkled with tubercular granulations; in 1, the pulmonary and costal pleura of the right side were affected; in 1, the bronchial glands, mesentery, and lower part of the ileum, were the seat of the tubercular disease. In the 5th case, both the pleuræ and the peritoneum were sprinkled over with tubercles of various sizes, from that of millet-seeds to that of peas, densely packed together; there was also tuberculous matter in the glands of the neck and chest, liver and spleen; the lungs, compressed by effusion into the pleural cavities, were perfectly free from tubercles. In the 6th case, there was tuberculous matter in the bronchial glands. In 21 autopsics of children, he only found the lungs free from tubercles once; this was in a boy 11 years of age, who, besides a considerable serous effusion into the ventricles of the brain, had two large masses of tubercle in the cerebellum, many small ones on the surface of the liver, and caries of the vertebræ.

"In 146 adults affected with tubercles in the lungs, there were only 35 in whom the disease was confined exclusively to these organs; in the remaining 111, or nearly three fourths of the whole, the disease had extended to other organs. In children, the proportion in which the deposit of tubercles is limited to the lungs is smaller than in adults, M. Cless finding only 3 cases out of 20, in which all other organs were free. Barthez and Rilliet state the proportion to be 23 to 269. In 166 cases (adults and children,) of tubercular deposit in the lungs, there were only 13 in which the disease was confined to one lung; of these, in 10 cases it was the right lung, in 3 the left; it is true, that in the greater number of cases the dis-

* Medical Gazette, Aug. 1, 1845. † Schmidt's Jahrbucher, 1845, and Lancet.

ease had not advanced very far. When both lungs were affected, the right was usually most diseased, the proportion being 45 to 30; this result is not in accordance with the observations of Louis and others. In 146 adults, in whom the lungs were diseased, vomicæ were found 105 times, there being none in the other 41 cases; in children, the proportion in which vomica existed was smaller, there being only 9 cases out of 20 in which they were found; usually, the younger the child is, the less frequent is the occurrence of vomica; the very young ones most commonly sink under an acute tuberculization, which causes death before passing on to suppuration; moreover, young children are frequently carried off by other diseases superadded to the tubercular deposit, such as acute hydrocephalus, &c. Out of 166 cases, pneumothorax from rupture of a vomica, was noted as occurring four times, twice in the right lung, twice in the left. M. Cless relates two exceptions to the established rule that the usual seat of tubercles is at the summit of the lungs; in these two cases the disease affected the lower lobe especially, and in one there even existed a vomica."

M. Rochoux* very justly blames the majority of microscopists, that in their examination of tubercular deposit, they have not observed it at a sufficiently early period, but have selected instances in which the characteristics of the formation are obscured by the products of destruction of the surrounding pulmonary tissue. If a mass of commencing tubercular matter be placed under the microscope, it presents according to Rochoux, a rounded form of 0,15 to 0,20 of a millimetre in diameter; and imbedded in the substance of healthy lung structure. In this state it cannot be removed without the destruction of numerous filaments of healthy tissue with which it appears to be necessarily connected. In colour, tubercle is semi-transparent, according to this observer, with a slightly roseate tinge. In internal texture it resembles the crystalline lens, being composed of a filamentous tissue disposed in a regular order; a section viewed under a power of 600 diameters exhibits a metallic lustre. The inflammatory origin of tubercle is maintained by Zehetmayer,† in a paper in which he describes minutely the process by which he conceives that the plastic deposit of pneumonia is converted into tubercular matter. His views, however, are like many of those of his countrymen, too hypothetical for these pages, suffice it to say that he considers that the conversion of effused fibrin into tubercle depends upon the deficiency of the former in serum, causing an impediment to its resolution; for says he, as crystals cannot form in a too concentrated solution, so the fibrin cannot be converted into pus, which according to him is the natural process of resolution, unless there be a sufficient quantity of serum. When, therefore, the serum is by any means abstracted in pneumonia, either by over-depletion, or by the occurrence of an exhausting diarrhœa, he regards the tubercular metamorphosis as inevitable.

The influence of anterior disease on the production of tubercle is closely investigated by Bouchut in his late work on the diseases of children. There are many diseases, according to his belief, which have a natural tendency to originate the tubercular diathesis, but in none is their tendency so palpable as in measles. To this opinon, which it must be allowed is very general in this country, and is held by many trustworthy observers, we may cite the opposite conclusions of M. Lugol, ('On the Causes of Scrofulous Diseases.') This latter author positively denies that any of the maladies which are commonly supposed to have the power

* Archives Générales, Mai 1845.

† Zeitschrift der k. k. Gesellschaft der Aertze zu Wien.

of producing tubercular diathesis, are capable of so doing. That phthisis and other forms of tubercular disease frequently show themselves for the first time after an attack of measles, scarlatina, the puerperal state, &c., he fully admits, but he regards the subsequent disease not as produced *de novo*, but merely as a manifestation of a previously existing scrofulous or tubercular diathesis, which had remained dormant until called into activity through the depressing agency of the prior disease.

18. *Entozoa.*—Some very interesting remarks upon the natural history and pathological relations of the class of parasitic animals occur in a lately published work by Klencke,* a concise analysis of which is to be found in the 'British and Foreign Medical Review' of the present month.† The main object of the communication appears to be, to declare the result of experiments by inoculation of the germs of different forms of hydatids by which he appears to have fully succeeded in ingrafting the parasitic animal. With respect to the order of intestinal worms, the author conceives that the ova are deposited with the fæces, and are hatched externally to the body, as he has frequently discovered the embryos of the species which are known to infest the human race, in the water of ditches. He entertains certain fanciful notions concerning the manner in which these embryos gain admission into the human body, but excludes from his consideration the very obvious way of ingestion with the food or drink.

§ IV.—*Cachexiæ.*

19. *Antagonism of cachexiæ.*—The antagonism of cachexiæ is one of the favourite doctrines of the day, with the continental physicians. M. Trousseau‡ has lately added to the list of mutually exclusive disorders, by affirming that there exists an antagonism between the chlorotic and the tubercular diathesis. He carries this hypothesis so far as to discountenance the exhibition of iron in the former class of affections, under the idea that in proportion as you cure the one state of the constitution, you render it amenable to the other. We need scarcely point out the absurdity of such notions; if no other grounds of objection were to be adduced, the experiments of Coster are totally subversive of M. Trousseau's fancies.

The mutual exclusion of tubercle and cancer, which is held by some is satisfactorily denied by Lebert§ from direct post-mortem investigation. He adduces three cases in which both products coexisted. A similar case is also recorded by Dr. Martin of Munich.‖

Schönlein admits the antagonism of phthisis and intermittent fever; on the other hand, MM. Sigaud¶ and Lefevre** distinctly deny it. The opinion of the former is particularly worthy of credence, inasmuch as he was at one time a zealous advocate of the doctrine. The experience of the latter is derived from the neighbourhood of Rochefort where both diseases are unusually common. Dr. Chambers†† of Colchester, in a recent communication upon intermittent fever, alludes to a case within his own knowledge, in which a patient was attacked with well-marked quartan ague, when in the last stage of phthisis.

* Impversuche und Natur-historisch Pathologische Untersuchungen zur Erforschung der Helminthiases als Contagion. † October 1845.

‡ Journal de M. Beau, Juillet 1845. § Muller's Archives, Heft 2, 1844.

‖ Allgemeine Zeitung, and Lancet, August 1845.

¶ Du Climat et des Maladies du Brezil, &c.

** Gazette Médicale, Sept. 6. †† Provincial Medical Journal, Oct. 29, 1845.

PART II. SPECIAL PATHOLOGY.

§ I.—*Diseases of the Nervous System.*

20. *Insanity.*—The period embraced in the present Report has been distinguished for more than the usual number of communications upon this profoundly interesting subject. The last Reports of the numerous institutions for the reception of the insane, both in this country and America, are especially remarkable for the importance of their contents; lectures upon the disease in all its bearing have been published under the auspices of Pinel, Conolly, and Baillarger; discussions have taken place in the learned societies of Paris; and lastly, several monographs of variable value have issued from the press. Among the latter, we may mention two small works by Drs. Steward* and Joseph Williams.† Of these, the first embraces, though in the briefest manner, every department in the study of the affection; the second is occupied chiefly with the consideration of the remedies in general use, and more particularly those of narcotic properties.

Our space will not allow of an extended analysis of the various communications referred to, although several of them would well repay the labour necessary for the task; it will be more consistent with the intention of these Reports to select some points of paramount interest, and to endeavour to mark out the progress of science by collating the opinions of the individual writers.

We shall not occupy the reader's attention with the more speculative doctrines which the investigations of insanity always call forth;—as to how far or how little a material cause is in all cases present, either in the form of palpable cerebral lesion, or in the more microscopic changes which are inappreciable to ordinary vision; or whether insanity may not be in some cases a purely psychological disorder—the exaggerated manifestation only in fact of the less exalted principles of the human mind. We shall proceed at once to the consideration of certain questions connected with treatment, upon which a difference of opinion is most prominent.

Bleeding.—There is no one disease, perhaps, in which the lancet of the routine practitioner has done more irreparable mischief than in the treatment of mania. Dr. Earle ‡ observes that "bloodletting has probably confirmed more cases of insanity that it has cured." Dr. Conolly§ speaks in terms of equal force, affirming that the worst cases which have come under his notice have been those which have been largely bled before admission, and that in six years' experience at Hanwell he has never seen a single case which called for general depletion. Dr. Williams || and Dr. Steward both appear to think bleeding necessary in some instances, but agree with the former writers that it is pernicious as a general remedy. Dr. Williams states that "it should never be resorted to without paramount necessity, and then not largely." The cases in which both he and Dr. Steward think it advisable are in the case of suppressed customary evacuations, as epistaxis,

* Practical Notes on Insanity. † Essay on Narcotics, &c. in Insanity.

‡ Report on the Bloomsdale Lunatic Asylum. Philadelphia Medical Examiner, May, 1845.

§ Lancet, Oct. || Op. cit. p. 30.

and in the critical age in females. The topical abstraction of blood is not condemned by any of the above writers, but, on the contrary, is regarded as a remedy of great power.

Narcotics.—The exhibition of this class of medicines in mania forms the subject-matter of a large portion of Dr. Williams's work; we shall, therefore, briefly recapitulate the results of his experience. Opium is contra-indicated in all cases in which the restlessness is accompanied with great heat of skin, and where the nervous excitement is evidently caused by increased arterial action. It is also, he observes, contra-indicated in mania associated with paralysis or evident organic cerebral disease. Persons labouring under suicidal mania generally bear opium well. Hyoscyamus is deservedly eulogised, especially where it is necessary to keep up a continued narcotic effect, as it diminishes excitement without producing many of the unpleasant effects of opium. The endermic use of belladonna is also well spoken of.

Narcotics do not enter into the list of curative agents mentioned by Dr. Steward.

Purgatives are of questionable utility in mania, unless they possess more of an alterative than drastic quality. Dr. Woodward (3) and Dr. Steward are both agreed upon this point. Dr. Williams, however, is disposed to regard them in a more favorable light.

21. *Hydrocephalus acutus.*—Dr. Smith,* of Leeds, has recently written a small work upon this disease, apparently addressed rather to the public than the profession. The malady, as far as its symptoms and progress are concerned, is well described, though there is little stated which is not to be found in the works of Golis, Smyth, and Whytt. The chief novelty contained in this publication is one to which our readers will probably find some difficulty in subscribing, namely, that the disease is a *fever*, to which he gives the name of *hydrocephalic fever*, and like other fevers not characterized by any invariable organic change. Its inflammatory nature is distinctly denied. Another novelty introduced by the author is the affirmation that the disease is not hereditary, and yet, curiously enough, in a well-written chapter on the prevention of the disease, he would endeavour to extinguish it mainly by improving the constitutional vigour of the parents; what is this but a virtual acknowledgment that the predisposition may be transmitted from the parent to the offspring, in other words, that the disease is hereditary? It is strange, moreover, that the author fully admits the affinity of the disease to scrofula; but who doubts the hereditary nature of the latter?

The treatment laid down by Dr. Smith is that which would be suitable in "any other nervous fever;" if phrenitic symptoms predominate, depletion is advised; if symptoms of "debility, nervous irritation, and struma," depletion is to be avoided, and laudanum, ether, &c. substituted. The employment of mercury is stated to be founded on erroneous principles.

22. *Extensive suppuration of the brain.*—A case is related by Dr. Sumner, of Newhaven, U. S., of a boy æt. 11, who after a fall upon the ice was seized with excessive pain in the head, constant delirium, jactitation, &c. The most remarkable symptom, however, was an extraordinary accuracy and extent of his memory, which declared itself in the intervals

* On the Nature, Causes, and Treatment of Acute Hydrocephalus. London, Churchill. 1845.

of his delirium. After death the whole surface of the brain was found to be covered with pus spread out beneath the arachnoid.*

23. *Organic disease, tumours, &c. of the brain.—Colloid Cancer.*—The following case recorded by Dr. Thomas Miller,† if not unique is sufficiently rare to be worthy of commemoration. The patient, a man æt. 40, complained of severe pain at the back of the head, with hemiplegia of the right side, and protrusion of the tongue to the *left*. Deglutition was difficult, the patient often coughing up his food. The left side of the tongue was likewise observed to be paler than the opposite. The patient continued in this condition for some time, but gradually lost flesh and strength. After death the principal lesion was found, as was expected, in the cranium. The brain and cerebellum were substantially healthy, but in the left occipital fossa a gelatinous tumour was discovered, which pressed upon the left lobe of the cerebellum, the junctions of the pons and crura cerebri, and the origins of the 6th, 7th, 8th, and 9th pairs of nerves. The tumour appears to have commenced within the internal ear, making its entrance into the cranium through the internal auditory foramen. Thence it spread over the occipital fossa, and sent prolongations out of the calvarium, through the foramen lacerum and the carotid foramen. These two prolongations coalesced and compressed the 9th nerve as it reached the tongue. The symptoms of this case were thus satisfactorily accounted for. The pressure on the 9th pair was the cause of the paralysis of the œsophagus, and of the protrusion of the tongue to the side opposite to that which was hemiplegic. The interference with the par vagum accounted for the disturbance of the respiration and heart's action. The hemiplegia of the right side was also due to the same compressing agency.

24. *Cerebellum, diseases of:*—The difficulty which surrounds the diseases of that portion of the nervous system contained within the solid walls of the cranium, and the present uncertainty of the signs by which we endeavour to distinguish disease of one portion of the cranial contents from another, is very clearly pointed out in an essay by M. Toulmuche,‡ entitled "Considerations on the Uncertainty of the Functions attributed to the Cerebellum, and on the Absence of Symptoms by which we can recognize during Life the different diseased Conditions of that Organ." The author investigates, in the first place, the physiological doctrines which assign as the office of this portion of the nervous system the presiding over the generative faculty, and of inducing a co-ordinate and harmonious action in the muscular system. Both these doctrines are tested by the result of observations, in which disease was found to exist in this organ after death. With reference to the influence of the cerebellum upon the sexual organs, he clearly shows that if in some instances disease of that organ has been accompanied by excitation of the generative faculty, in others there was no such manifestation. So also with regard to the regulation of muscular movements.

These observations are to a certain extent confirmed by the reports of two cases of disease of the cerebellum, one of scirrhous tumour which occurred to M. Prestel,§ the other one of fungoid disease, witnessed by Mr. Taylor,‖ of Guilford. In neither of these cases was the harmonious action of the muscular system at all interfered with, neither

* American Journal of the Medical Sciences, April 1845.

† Philadelphia Med. Examiner, April 1845.

‡ Gazette Méd., No. 29, 1845.

§ Gazette Médicale, Août, 1845.

‖ Lancet, Aug. 23. 1845.

was there any erotic excitement. The difficulty of arriving at a satisfactory diagnosis depends, as is correctly observed by M. Toulmuche, upon the impossibility of separating symptoms which arise from disease of the cerebellum, from those dependent upon almost inevitably coexistent disturbance of the cerebrum. The symptoms upon which he is inclined to place the greatest reliance are, pain in the occipital region, continual giddiness, paralysis of the opposite arm and leg not implicating the tongue; diminution of the sensibility of the skin, integrity of the intellectual functions; blindness, deafness, and finally coma and other symptoms common to encephaloid diseases in general.

25. *Muscular paralysis.*—Several cases of local muscular paralysis have lately been put on record,* the most interesting of which are two in which the serratus magnus was the muscle affected. The principal characteristic of this lesion, in both cases, was a tilting upwards of the inferior angle of the scapula, by which it was raised the distance of two or three vertebræ above its fellow. As a natural consequence the superior anterior angle, and with it the shoulder, was depressed. The cause of the paralysis was a strain in one instance, and the effect of cold in the other. M. Rayer supposes that the proximate cause is a paralysis of the external thoracic nerve, similar to the well-known affections of the seventh pair. Two cases subsequently occurred to M. Nelaton,† in one of which the paralysis was double.

26. *Paralysis of the seventh pair, with partial loss of taste.*—The case recorded under this title is replete with physiological interest. The subject of it was a lad, æt. 10, who was seized with severe pain in the right ear, followed by suppuration, and complete paralysis of the right side of the face, without loss of sensation. In addition to these, the ordinary symptoms of paralysis of the portio dura, it was found that the sense of taste was imperfect on the corresponding half of the tongue, quinine producing no disagreeable taste, while on the opposite side its nauseous flavour was perceived as usual. It was clearly ascertained that ordinary sensation was as perfect on one side as the other, *gustation* alone being disordered.

In reference to this, and three similar cases, the author calls our attention to the fact that the sense of taste was not entirely abolished, but merely blunted, and that it followed exactly the intensity of the facial paralysis, increasing and improving, *pari passu*, with that symptom. In investigating the physiological explanation of the phenomenon, he disputes the supposition of Longet, that the loss of taste depends, in these cases, upon dryness of the tongue and fauces consequent upon the continual dribbling of the saliva from the paralysed lips,—as well as that of Berard, who attributes it to paralysis of the vidian branch of the cordi tympani. His own mode of accounting for the loss of taste is that it is in no way connected with the fifth pair, but depends essentially upon a motor paralysis of the contractile element of the papillæ, which renders them unable so to apply themselves to sapid substances as that these should produce their ordinary effect upon the true gustatory nerve.‡

Two cases of the ordinary form of facial paralysis are mentioned by Mr. Harmer Smith, of Sheffield, which were supposed to originate in the excessive use of tobacco.

27. *Chorea.*—Dr. Corrigan has exhibited the Indian hemp in this disease,

* Gaz. des Hôpitaux, No. 79, Sept. 2, 1845.
† Gaz. Méd. No. 79.
‡ Archives Générales de Médecine, 1845.

with the best effects. The details of the cases, which we shall here briefly allude to, will be found in an early number of the Dublin Hospital Gazette. The first was that of a girl, æt. 10, in whom the disease affected the muscle of both upper and lower extremities, as well as those of the tongue. She was ordered five drops of the tincture three times a day (for formula, vide 'Half-yearly Abstract,' Vol. I, p. 361). In eleven days great amendment had taken place, when the dose was increased to fifteen drops. This was continued for five weeks, when a perfect cure was obtained. A second case was discharged in six weeks. In a third case, which had lasted ten years, a cure was accomplished in a month. Dr. Ross,* of Boulogne, states that he has derived great advantage from stryehnia in the same affection, in the dose of 1-8th of a grain thrice a day.

28. *Tetanus.*—The references at the foot of the page† appertain to the reports of four successful cases of tetanus. The first instance was the consequence of crushing of the finger. The treatment consisted of the extract of belladonna internally, blisters to the spine, and turpentine enemata. In the second case, which was under the care of Mr. Solly, the remedies employed were turpentine enemata, mercury to salivation, tincture of the Indian hemp, and wine. The third and fourth cases, which supervened upon a gun-shot and contused wound, recovered under the use of bleeding and tartar emetic.

29. *Tarentismus.*—This extraordinary nervous affection has recently been observed by M. Gozzo,‡ a Savoyard practitioner of some note. The only remark worthy of commemoration contained in his essay, is the refutation of the generally received idea of the effect of music upon the patients. The disease is acknowledged to depend upon the bite of the spider, and occurs, according to his experience, most commonly in the months of June, July, and August, at which times the people are exposed to the attack of the insect during their agricultural labours.

§ II.—*Diseases of the Respiratory System.*

30. *Auscultation.*—The general doctrines of auscultation both of the lungs and heart, have recently been reviewed by Dr. Marshall Hughes.§ The author's object in publishing his manual, is to afford to the medical student an easy and progressive acquaintance with the elements of the science, and, as such, it is worthy of every commendation. To the more finished stethoscopist it is comparatively of little value, as it contains nothing that he has not long since made himself acquainted with in a more detailed form in the writings of Laennec, Martinet, Barth, Roger, Fournet, &c.

31. *Diseases of the larynx and trachea—Œdema glottidis.*—In Art. 6 will be found a short account of a memoir upon this subject, by M. Lesiauve. The symptoms, progress, and diagnosis of the disease are well described, but do not require further comment in this place. The only point open to discussion is the opinion entertained by the author that there is an idiopathic form of œdema,—one entirely unconnected with inflammation. In this view he is opposed by the majority of pathologists; but we may state that Dr. Watson || fully admits the distinction insisted upon by the author,

* Lancet, June 1845. † Philadelphia Medical Examiner, June 1845; Medical Times, July 19, 1845; Provincial Medical and Surgical Journal, Aug. 27, 1845; Gazette des Hôspitaux, Septembre.

‡ Annali Universale de Medicine: in Gazette Méd. No. 17. 1845.

§ Clinical Introduction to the Practice of Auscultation. 12mo, London, 1845.

Lectures, vol. i, p. 808.

and gives certain rules by which the inflammatory and non-inflammatory œdema may be recognized. It cannot, however, be denied that the latter is infinitely rare in comparison with the former variety.

32. *Croup.*—M. Forget* writes for the purpose of recommending repeated emetics, not as they are generally exhibited, at the onset of the disease only, but in the latter stages, in order that the false membranes may be detached by the agitation of the respiratory passages caused by the act of vomiting. He inveighs against the custom which we hope, however, if it exists, is confined to his own country, of directing the treatment solely against the initiatory inflammation, to the neglect of those effects of the disease which are the immediate cause of death. His practice is to give an emetic three or four times in the day, until all traces of the tracheal membrane have disappeared.

33. *Phthisis.*—Dr. Latham † mentions a circumstance in the history of phthisis which is worthy of being made generally known, especially as it is calculated to afford assistance in the diagnosis of recent tubercular deposit. He states that a murmur is often heard in the earlier stages of the disease, over a space bounded by the sternum and the cartilages of the second or third rib, when no normal heart sound is to be heard in any other situation. The murmur is of a gentle blowing character, and accompanies the systolic movement of the heart. No explanation is given of the sound, but the author hints that it may possibly have its seat in the pulmonary artery. The surmise is doubtless correct, as in the presence of tubercular deposit exerting slight compression upon this artery, or its primary ramifications, we have every physical condition necessary for the production of the murmur described. Dr. Winn,‡ of Truro, has noticed this murmur in a single instance; but it was heard only during expiration, and disappeared as softening took place.

M. Rayer § has continued his important studies upon the comparative anatomy and pathology of phthisis. Among the many interesting points which he touches upon, we select that of the cretaceous deposits occasionally found in the upper lobes of the lungs. The author believes the doctrine which attributes these deposits to the transformation of tubercular matter as far too exclusive; and considers that they arise far more frequently in small deposits of pus than in tubercle. As we have stated in a former Report (Vol. I, p. 199), we are inclined to look upon the notions of the curability of consumption derived from the presence of these concretions, and fissures in the lung, as considerably exaggerated; we are glad, therefore, to see the opinion participated in by so accurate an observer as Rayer.

In reference to the etiology of consumption, some very curious as well as important results have arisen out of the laborious investigations of Dr. Guy as to the influence of employments on health. He has satisfactorily determined not only the great power exercised by in-door occupation upon the development of the disease, but he has ascertained, in addition to this, that muscular action has a certain preservative influence, even under the unfavorable circumstances attendant upon a confined atmosphere. This fact is illustrated by a comparison of the liability to the disease in pressmen and compositors, two classes who are exposed to the same disadvantages as regards confinement in ill-ventilated apartments, &c., but with this difference, that the pressman undergoes considerable muscular exertion, the

* Bulletin de Thérapeutique, Mars 1845.

† Lectures on subjects connected with Clinical Medicine, vol. i.

‡ Med. Gaz. Oct. 17, 1845. § Med Chirurg. Review, July 1845.

other none. It is a fact no less curious than unexpected, that the former is much less frequently the victim of consumption than the latter.

34. *Value of naphtha in phthisis.*—Dr. Hastings, of London, has issued a second edition of his work on the curability of consumption by this agent, in which he adduces further evidence in its favour. Dr. Hocken, the only person who has publicly supported the assertions of Dr. Hastings, has unfortunately offered a practical demonstration of their fallacy in his own person, having lately fallen a victim to the disease he professed to cure. Dr. Bellingham* and Dr. Benson† have both subsequently recorded their experience of the remedy, and both strongly deny that it possesses the most remote power over the progress of tubercular disease. [We may be allowed to state, that in common with many others we have endeavoured to form an independent opinion of the merits of naphtha, and, moreover, have been at some pains to obtain *the* naphtha. The result of a very considerable number of trials is this: That in advanced cases of phthisis it has not the slightest effect in retarding the progress of the disease, or even in mitigating any of the symptoms. In some few instances it appears to impart a fictitious feeling of improvement for the first few days, in this respect operating as a simple stimulant, but in the majority it is borne with difficulty, exciting nausea, vomiting, or a feeling of gastrodynia. In some cases of incipient phthisis, we at first were inclined to anticipate benefit, but the lapse of a few weeks or months invariably dissipated our hopes. In cases of chronic bronchitis, and in the catarrhs of relaxed habits, in which stimulant expectorants might be expected to be beneficial, naphtha has certain advantages, and these we are constrained to believe are the forms of disease which have been either ignorantly or designedly called phthisis in many of the reputed cures of that malady.]

35. *Tapping tubercular cavities.*—This proceeding, which has been revived by Dr. Hastings, of London, has been subjected to severe but deserved criticism by Dr. Campbell.‡ This writer insists upon the inefficacy of any local means, *per se*, in the cure of a disease essentially constitutional. He properly observes, that even if the intention of the operation should be accomplished, which he maintains it never can be, and the walls of the tuberculous cavity be brought into apposition, the disease is as far as ever from being cured, for we have still remaining that condition of blood which leads to the deposition of tubercular matter.

36. *Empyema.—Paracentesis thoracis.*—Dr. Faure,§ physician to the Military Hospital at Toulon, communicated to the institute the results of his experience on this subject. He is of opinion that the puncture of the thoracic walls, performed with prudence, in order to evacuate a collection of fluid accumulated in the pleura, is an operation totally unattended by danger, and generally followed by considerable relief to the patient. The danger most to be dreaded from the paracentesis thoracis, is generally supposed to be the introduction of air into the chest. Fears from this cause are, according to Dr. Faure, nugatory, the quantity of air introduced into the chest during the operation being wholly unimportant, and the introduction ceasing altogether the moment the canula of the trocar is withdrawn from the wound. The apprehensions entertained are therefore founded only in theory, but not confirmed by practice. Further, it should be remembered that the disease for which the operation is proposed frequently baffles the skill of the physician, and groundless fears should not

* Dublin Medical Press, June 4. † Ib. July 2. ‡ Lancet, June 14.
§ Acad. des Sciences Med. France, Sept. 27.

be allowed to deter him from a line of conduct which may, if it do not in all cases save the patient's life, at least alleviate his sufferings and prolong his existence.

37. *Pneumonia.*—The occasional occurrence of inflammation of the lungs, as a complication of acute rheumatism, is mentioned by Drs. Latham,* Burrows,† and Schonlein.‡ The proportion in which it happens, and the ratio it bears to heart affections, is thus stated by the former of these writers: Of 136 cases of acute rheumatism noticed by him, pneumonia or other lung disease occurred in 24, or in about 1 in 5½ cases; of those instances in which the heart was unaffected, the proportion was 1 in 9; but in those cases in which the heart was inflamed, the lungs were also inflamed in 1 in 5. Hence, as the author concludes, the occurrence of inflammation of the lungs is not an event much to be dreaded in acute rheumatism, unless the heart be simultaneously affected, in which case it forms a serious addition to a disease already sufficiently full of peril. Dr. Latham has noticed that pulmonic inflammation is not to be expected in the course of rheumatic fever, when the endocardium alone is complicated; the dangerous connexion appears to be between inflammation of the pericardium and of the lungs. These various points are well illustrated in the following statistics:

	Cases.		Cases.
In rheumatism without heart affection	46	the lungs were inflamed in	5
,, with endocarditis .	63	,,	7
,, with pericarditis .	7	,,	4
,, with endocarditis and pericarditis combined	11	,,	8

Dr. Upshur has added fresh evidence to that already mentioned in our first volume, in favour of the efficacy of the iodide of potassium in the suppurative stage of pneumonia. Several cases are related by him in which its agency was well defined and incontestible.

38. *Gangrene of the lung.*—The *Gazette des Hôpitaux* of August 30, 1845, contains a brief critical inquiry into the pathology of this lesion, in which the writer endeavours to show that Laennec is correct in regarding it as, comparatively speaking, seldom the result of pneumonia, but that it is to be considered as one of the local effects of a general debility of the system, and as such is analogous to the gangrene in the extremities of old and debilitated persons.

[It is certain that gangrene of the lung is generally seen to occur in subjects worn out by dissipation, and more particularly in drunkards. It is not improbable that a more accurate investigation of these cases might trace some connexion here, as elsewhere, between the occurrence of gangrene and obstructions of the pulmonary vessels by fibrinous coagula, independently of inflammation.]

39. *Hæmoptysis:*—In the "Summary of the Transactions of the Royal College of Physicians of Philadelphia,"§ Dr. Morris has referred to four cases in which hæmoptysis occurred in infants of the age of three months, one of which was fatal. An instance is also cited by Dr. Walker,‖ of Teignmouth, in a child four years old. These examples are interesting only from the rarity of the symptoms in subjects under the age of fifteen, as stated by M. Louis, Green, and others.

* Op. cit. p. 161.
† Lancet, July 26.
‡ Clinical Lectures reviewed in Med. Chirurg. Review, Oct. 1845.
§ Amer. Jour. Med. Sciences, July 1845.
‖ Prov. Med. Journal, Aug. 13, 1845.

40. *Emphysema.*—The anatomical site of this affection is one of the questions which give rise to continual discussions. The latest writer upon the subject is M. Bonino,* who endeavours to compromise the question as to the vesicular or interlobular situation of the air, by admitting that there are two or three varieties of the disease existing, and that each is distinct in its causes, progress, and result. The reason that interlobular emphysema does not coexist with the vesicular form, he states to be, that at the same time that the air-cells become gradually distended, the parenchymatous structure of the lungs is condensed under the pressure, so that at length when rupture takes place, the air is prevented from gaining admission into the interlobular spaces. In that form of emphysema which occurs during labour, paroxysms of hooping cough, &c,, the air-cells give way with a suddenness which precludes the above-mentioned condensation of the intervesicular tissue.

M. Piedagnal† maintains that death in emphysema of the lungs generally results from the penetration of the extravasated air into the vascular system. In support of this opinion he adduces several cases in which air was found after death in the arterial system of the brain.

41. *Asthma.*—Dr. Casey‡ describes the effects of the iodide of potassium as highly satisfactory in this disease, having exhibited it in twenty-five cases with success.

42. *Black pulmonary matter.*—In our last Report (Half-yearly Abstract, Vol. I., p. 203), we gave an account of M. Guillot's researches on the carbonaceous deposit which is found in the lungs of old people, and which that author determined to be quite independent of any inhalation of particles from without. The communications of Dr. M'Kellar§ and Dr. Brockman,|| which come within the limits of the present half-year, clearly show that a diseased condition of the lungs is induced by the inhalation of carbonaceous matter, and that such matter is seen to accumulate in great abundance in the lungs of the persons affected. The essential character of the miner's asthma, or miner's consumption as it is sometimes called, is shown by Brockman to be a black, pitchy appearance of the lung, varying in extent and depth of colour, according to the stage to which the disease has advanced. In addition to this, as is also stated by Dr. M'Kellar, cysts of different sizes are observed, filled with the black matter before mentioned. The texture of the lung is not otherwise altered, according to Brockman, but M'Kellar speaks of serious disorganization to the extent of the formation of large excavations. In examining the etiology of this disease, Brockman is disposed to deny the exclusiveness of the opinion which attributes it to the inhalation of carbonaceous particles alone, but thinks, that it depends in part upon the formation of an organic pigment. The reasons assigned by him for this opinion are: 1. That the product itself is partly animal and partly vegetable. 2. That the lung does not increase in specific gravity, which would be the case if it were extensively invaded by extraneous matter. 3. Because it is not necessarily confined to persons who have worked in mines, and, moreover, because some persons of light and florid complexions escape it altogether, although engaged in mining occupations. The theory supported by this author, from the consideration of the above facts, is that the disease is due to a preponderance of "venosity" in the blood, favoured by the circumstances under

* Gazette Méd. No. 31.
† Acad. des Sciences, France, Sept. 9, 1845.
‡ Boston Med. and Surg. Journal.
§ London and Edinb. Monthly Journal, Oct. and Nov. 1845.
|| Ib. from Neumeist. Repertor.

which the miner is placed, as the inhalation of air deficient in oxygen and containing carbonic acid, together with the use of a highly carbonized aliment. In other words, he looks upon it as an effort of nature to relieve the blood of the carbon with which it is surcharged. The disease described by Dr. M'Kellar is evidently a more serious affection than that witnessed by Brockman, and consists of chronic irritation of the pulmonary passages, inducing consolidation and subsequent breaking down of the tissue into cavities of different sizes. We regard it, in fact, as identical in nature with the grinder's asthma, the exciting cause only being different; and in the latter case possessing colouring principles of greater intensity. Like grinder's asthma also, as is shown by Dr. Favell, we conceive that there is no necessary association between the condition of lung in question and tubercular phthisis.

The treatment followed by Brockman, is the removal of the patient from his trade, the exhibition of the peroxides of iron, warm baths, and the Carlsbad water.

43. *General treatment of pulmonary diseases.*—At a late meeting,* of the London Medical Society, Dr. Golding Bird drew the attention of the audience to the value of the inhalation of a moist warm air in the treatment of affections of the respiratory passages. Although, as Dr. Bird admitted, there is no novelty in the suggestion, it is one which from its extreme simplicity is too often overlooked. We are frequently in the habit of availing ourselves of its good effects by the aid of an ordinary tea-kettle, the steam of which is made to diffuse itself through the room. Dr. Bird advises the precaution of previously closing all crevices by pasting paper over them, a suggestion which doubtless add much to the efficacy of the plan.

§ III.—*Diseases of the Circulatory System.*

44. *Auscultation of the heart.*—In a work to which we have before had the satisfaction of referring, Dr. Latham introduces certain observations respecting the physical signs of cardiac disease, which appear to us replete with practical value. He divides the murmurs occasioned by disease into two great classes, the endocardial and the exocardial: the former single for the most part, and soft and blowing; the latter almost invariably double, and of a rougher character. He condemns as unprofitable and needless, the minute subdivision of endocardial murmurs, which many auscultators describe for the sole purpose it would appear of confusing a subject otherwise sufficiently simple and intelligible; and suggests that we should be satisfied with the knowledge that a particular murmur is endocardial without paying any nice attention to its *blowing* or *sawing*, or *filing* characters. As Dr. Latham justly observes, the appreciation of heart disease, after all, is not to be derived from the quality of the sound, but by taking its character in connexion with the space in which it occurs, its exact ratio to the movements of the organ, and above all in its connexion with other information to be derived from an examination of the condition of those organs, as the lungs and the liver more especially, which are known to exercise a powerful influence over the heart's action.

45. The possibility of distinguishing between murmurs originating in the pulmonic and aortic valves respectively, has lately been fully discussed

* Reported in Lancet, Oct. 4, 1845.

upon the occasion of the reading of a paper before the Medico-Chirurgical Society, by Mr. Ormerod of Caius College, Cambridge, in which this possibility is strongly maintained. The cases in which a pulmonic murmur is found were stated to be chiefly of two kinds: cases of anæmia, and cases of acute rheumatism, the former greatly preponderating. Dr. Williams stated his belief that as a general rule, murmurs that are propagated along the carotid arteries, are aortic, whatever may be their original intensity as regards the organ itself. On the other hand, but by no means necessarily, he thinks that a murmur confined to the middle or right border of the sternum might be pulmonic. Dr. Kingston judiciously observed that in many cases the stethoscope was insufficient to decide the point, and suggested that the diagnosis would derive greater assistance from the history of the case. If the sound followed rheumatism or primary disease of the heart, he thought that it might safely be attributed to the aortic valves; if on the contrary, it was consequent upon lung disease, and was accompanied by jugular pulsation, it might be considered as arising in the pulmonary artery.*

46. We have in our former Report, (Vol. I, p. 205,) expressed our belief that a more extended inquiry would show that disease of the mitral valve does not give rise to a cardiac murmur, but that such murmur when it is present, is due to coexistent disease of other parts of the heart. Dr. Barlow† has recently likewise expressed a similar opinion, and accounts for the murmur which doubtless very frequently attends disease of that valve, upon the supposition that it is caused by distension of the right ventricle. This distension, he affirms, almost always accompanies disease of the mitral valves, and is declared by the white patch referred by Mr. King to attrition, by others to slight attacks of pericarditis.

47. *Connexion of heart disease with rheumatism.*—The following statement embodies the experience of Dr. Latham‡ upon this matter. The total number of cases of acute rheumatism from which he draws his conclusions is 136, of which the heart was affected in 90, exempt in 46. Of the 90 cases, the endocardium alone was the seat of disease in 63; the pericardium alone in 7, the two membranes combined affected in 11. Three cases were doubtful. Upon these facts the author comments in terms which cannot be too strongly impressed upon our minds. It is believed, he observes, that among the sufferers from acute rheumatism, one now and then has his heart inflamed; the occurrence is looked upon as an accident, and as not being common. But we see here, that so far from being exceptional, some affection of the heart is the rule in acute rheumatism, occurring in two thirds at least. Again, the pericardium is generally supposed to bear the brunt of the inflammation under these circumstances, but it appears in reality that for one instance of pericarditis, the lining membrane of the heart is inflamed nine times. These are indeed, as Dr. Latham observes, momentous facts, for when we further consider that out of 63 cases, the heart is fully restored to a healthy condition in only 17, we must no longer consider acute rheumatism as a trivial disease, as we fear is too commonly the case, but one which for the sake of humanity, the physician should watch from hour to hour. (14) For much useful information in connexion with the cardiac complication of acute rheumatism, the reader is referred to a series of Clinical Reports by Dr. Taylor, which appear in several consecutive numbers of the Lancet.

* Reported in Lancet, Medical Times, and Medical Gazette, &c.
† Guy's Hospital Reports, Oct. 1845, p. 306. ‡ Op. cit. p. 144.

48. *Pericarditis.*—Dr. Latham* has made a remark in reference to this disease, which although it is opposed to general belief, yet considering its source is worthy of commemoration. It is to the effect that the friction-sound is neither "abated nor abolished, nor otherwise altered" by the effusion of serum into the cavity of the pericardium. He explains this fact upon the presumption that the heart does not yield to the pressure of the fluid to such a degree as to prevent its surface coming into contact with the opposed membrane. In the pleura the case is different, because the lungs are readily compressed.

The same author calls attention to the fact, that pericarditis is very apt to occur in cachectic states of the system, and towards the close of other diseases, and after severe accidents.†

The frequent complication of pericarditis with morbus Brightii is much insisted upon by Dr. Taylor,‡ who remarks, that of fifty cases in which the latter disease was observed, the pericardium was affected in 1 in 10; while of 142 cases in which no kidney disease existed, the traces of pericarditis were found in only 1 out of 35.

49. *General treatment of organic disease of the heart.*—We have much pleasure in calling the attention of our readers to some sensible remarks by Dr. Scott Alison,§ contained in a small work recently published by him, upon the treatment of organic alterations of the heart, by the preparations of iron. A condensed abstract of the most interesting portion of this brochure will be found in a previous page; we shall, therefore, content ourselves in this place by expressing our belief that the observations of the author will be found of material assistance in the management of the severe affections of which they take cognizance. (Art. 11.)

50. *Functional disease of the heart.*—Dr. Billing alludes to a form of cardiac disease described by Dr. Christison, (vide Abstract, vol. I, p. 35,) and differs from him in the opinion that the disease is entirely functional; he believes that in these cases there is slight dilatation of the ventricles. He alludes, in explanation of this opinion, to the circumstance that in early life the heart is larger in proportion to the other organs than in adult age; wherefore, as Laennec had previously remarked, children often present signs of hypertrophy, with dilatation, which disappear in after-life. Dr. Billing thinks that the equilibrium which is thus established about the age of puberty, had not occurred in Christison's cases; but that the deficiency would not be discovered until the subjects had been exposed to conditions likely to develop functional disarrangement.‖

An excellent description of several forms of functional disease of the heart, from the pen of Dr. Corrigan, will be found in a former part of this volume. (Art. 10.)

51. *Angina pectoris.*—In a memoir which was recently presented to the French Academy of Medicine, M. Lartigue¶ supports the opinion that angina is a purely neuralgic affection of the cardiac nerves, and is not necessarily connected with any form of organic disease, though it may coexist with many. He carefully distinguishes true angina from neuralgia of the pneumogastric nerve, with which he states that it is frequently confounded. A similar opinion is recorded by M. Mignot.**

52. *Cyanosis, statistics of.*—One hundred and eighty cases of this con-

* Op. cit. p. 132. † Ib. p. 357. ‡ Paper read before Med. Chirur. Society, June 24, 1845. § Some Observations, on Organic Alteration of the Heart; London, 12mo, 1845. ‖ Dublin Med. Press, July 16, 1845. ¶ Bulletin des Acad., No. 8. ** Bulletin Med. de Bordeaux, Feb. 1845.

dition of the vascular system are analysed by M. Aberle,* of Vienna, with the following conclusions:—

In 100 cases there was deficiency of the septum ventriculorum; in 22 the foramen ovale was open; in 65 it was closed. In four instances the pulmonary artery arose from both ventricles. In 87 cases in which the aorta communicated with both ventricles, the pulmonary artery was much narrowed, or entirely closed, in 37. Two thirds of the cases occurred in males. The duration of life was as follows. In four cases, 24 hours; in sixteen, 14 days; one month in 4; from one to two months in 7; two to three months in 6; three to six months in 8; six to twelve months in 12; one to two years in 7; two to three years in 9; three to four years in 11; six to eight years in 11; eight to eleven years in 13; thirteen to sixteen years in 12; sixteen to twenty years in 8; twenty to twenty-five years in 10; twenty-five to thirty years in 6; thirty to thirty-five in 5; thirty-five to forty-five in 5; forty-fiveto sixty in 4; seventy years in 1.

53. *Rupture of the heart.*—A case of sudden death, from hemorrhage into the pericardium, is recorded by Dr. Maclagan, which is peculiar, inasmuch as the rent did not extend completely through the muscular substance, so as to communicate with the ventricular cavity; but consisted in a tearing only of the superficial fibres of the left ventricle, by which an opening was made into the coronary vein. The symptoms were those of internal hemorrhage; but as the bleeding took place more gradually than in ordinary cases of rupture of the heart, the patient did not sink until the expiration of an hour from the time of seizure. Although the case is one of an unusual kind, it is not without parallel; Cruveilhier describes the lesion under the name of apoplexy of the heart; but here, as in a case lately seen by Dr. Andrews, (London and Edin. Monthly Journal, 1845,) the blood does not necessarily make its way into the pericardial sac, but is extravasated among the muscular fibres. Of this an instance occurs quite recently in the 'Gazette Médicale.' The proximate cause of the rupture in both cases is supposed to be a fatty degeneration of the muscular fibre, which renders it less able to withstand the traction of the remaining healthy structure, in addition to the distending force of the column of blood.

54. *Aneurism.*—The periodical press of the last few months contains the description of three cases of aneurism of the heart and great vessels of more than ordinary interest. The first which we shall mention is one recorded by Dr. Turnbull,‡ of aneurism of the aorta, bursting into the right ventricle. This termination of the disease is exceedingly rare; a single instance is mentioned by Dr. Hope as the only one he had ever witnessed. Another also occurred to Dr. Williams. In all of these cases a continuous rushing bruit was heard over the region of the heart, which Dr. Turnbull considers to be diagnostic of the lesion. The pulse possesses the abrupt jerking character which is observed in aortic regurgitation.

An equally rare case, in which an aneurism of the arch of the aorta burst into the vena cava superior, has been described by M. Cossy.§ The author alludes to a similar case mentioned by Mr. Thurnam, and collecting the prominent symptoms of each, determines that the following signs are indicative of communication between the two vessels:—

1. Great œdema, limited exclusively to the upper extremities, neck and face, arising suddenly, and accompanied by violet discoloration and dimi-

* Lancet, Aug. 9, 1845.
† London and Edin. Monthly Journal, Sept. 1845.
‡ Lancet, July 24, 1845.
§ Archives Générales, Sept. 1845.

nished temperature of the integuments. 2. A marked bruit de soufflet having its greatest intensity at the upper portion of the right border of the sternum. 3. In one case reflux into the jugular vein, with pulsation, and blowing murmur, existed. 4. A continual painful whizzing in the ears, vertigo, transient delirium, and eventually coma. 5. Dyspnœa, not urgent; occasional slight hemorrhages. 6. Sudden appearance and quick attainment of the maximum intensity of the above symptoms.

Dr. Pareira has lately met with an example of supposed aneurismal dilatation of the septum, with bursting into the right ventricle. The patient was a girl, æt. 15, who died of purulent infection. Dr. Pareira acknowledges the possibility that the anormal communication might have been congenital, as it was found at that part of the septum which is sometimes deficient from birth. There is, however, one reason not alluded to by Dr. Pareira for thinking that such was not the case in the present instance, namely, that the pulmonary artery was of its usual dimensions. In all the cases on record of deficiency of the septum and origin of the aorta from both ventricles, the pulmonary artery, as in an instance recently recorded by Dr. Shearman,* was diminished to a third of its natural size.

The general principles of treatment in thoracic aneurism are extremely well laid down in a paper published in the 'Medical Gazette,' (Aug. 29,) by Dr. Chevers. A summary of the leading points of the essay is given in Art. 13.

§ IV.—*Diseases of the Chylopoietic System.*

55. *Diseases of the stomach. Perforation.*—In a recent number of the 'Dublin Journal of Medical Science,' Dr. Osborne endeavours to ascertain if there be any signs by which the existence of the insidious ulceration of the stomach by which perforation is produced, can be determined during life. The stomach in a healthy state, he observes, is insensible to the sense of touch; but if any portion of its coats be denuded by ulceration, it then assumes a sensibility similar to that of ulcers on other parts of the body. Upon this assumption he founds his views upon the diagnosis of the disease. He has found that, in certain cases which have proved fatal by perforation, that the patient is comparatively free from pain in certain positions, but especially in the semi-erect. This fact, taken in connexion with the ascertained frequency of the ulceration upon the lesser curvature, he thinks may fairly be considered to demonstrate that the pain in such cases is caused by the contact of the acrid fluids of the stomach with the ulceration, as would naturally occur when, in the supine position, those fluids rise upon a level with the smaller curvature. The idea is ingenious, and seems to have led to a correct diagnosis in four cases which he details. (Art. 16.)

The importance of distinguishing peritonitis arising from perforation from that depending upon other causes cannot be too strongly insisted upon, inasmuch as the indications of treatment more particularly in reference to the exhibition of medicinal or other fluids, must be widely different. The task of drawing the distinction is not in general one of much difficulty; but as cases occur which will give rise to hesitation, the remarks of Dr. Davies† are worthy of attention. This gentleman founds the distinction upon the suddenness of the access of pain in peritonitis from perforation, from the universal diffusion of the tympanitis, showing that the air is contained in the peritoneal sac, and not in the intestines,

* Provincial Medical Journal, July 30, 1845. † Med. Gaz. Sept. 12, 1845.

and from the great disturbance of the vesical function, which appears to depend upon the descent of the contents of the ruptured viscus upon the fundus of the bladder.

56. *Dyspepsia.*—The various forms of dyspepsia are well treated of by Dr. Dick,* in a series of essays, published in the Medical Gazette; but as these essays do not admit of a ready analysis, we refer the reader to the original.

57. *Intussusceptio.*—Dr. Henderson† relates a case of obstruction of the bowels, followed by stercoraceous vomiting, and supposed to depend upon intussusceptio, which he removed after much trouble, by the use of a tube 30 inches long, one end of which was inserted into the rectum, and then filled with water. The pressure of a column of water of the above height at length succeeded in overcoming the embarrassment.

58. *Diseases of the liver.*—One of the most important contributions to medical science which it falls to our lot to notice in the present semestrial period, is a monograph by Dr. George Budd, upon the diseases of the liver. The immediate subject of the writer's observations is prefaced by an introductory notice, in which the present state of our knowledge of the anatomy and physiology of the liver is most lucidly laid down; but as the consideration of this portion of the work more properly belongs to another report, we shall proceed to lay before our readers a brief analysis of those subjects which have a direct pathological bearing.

The first chapter, on congestion of the liver, need not detain us, as it is for the most part a recapitulation of the views of its pathogeny, with which the profession has already been made familiar by Mr. Kiernan.

59. *Suppurative inflammation of the liver.*—This branch of his subject is handled by Dr. Budd with great perspicuity, and is particularly worthy of attentive perusal, as it affords a clear history of many of those severe cases which go under the name of purulent infection. The manner in which the numerous deposits of pus are formed in the liver and other organs has already been alluded to, and Dr. Budd's opinions detailed in a former part of this Report (p. 197.) The causes of abscess of the liver, as stated by the author, are chiefly three:—1st, mechanical injury; 2d, and more frequent, is suppurative inflammation of some vein; 3d, and the most frequent, ulceration of the lower bowel, as it occurs in dysentery. This latter cause is acknowledged by Ainsley, and occurred in three fourths of his cases. The author of the present volume is, however, inclined to accord to it a still more extensive influence. Abscess of the liver may also follow ulceration of the stomach, of which instances are cited by the author, and ulceration of the gall-bladder and ducts. Among the symptoms indicative of hepatic abscess, Dr. Budd mentions rigidity of the right rectus muscle; but as it is observed in some other liver affections, it cannot be regarded as a sign of much value.

In his enumeration of the mode in which abscess of the liver terminates, Dr. Budd follows the description of the majority of writers upon the subject. We may here mention one termination, which, as it is not alluded to by him, is rare, or perhaps unique, namely, by bursting into the pericardium. Of this occurrence an instance is reported by Mr. Allan, staff-surgeon in the Mauritius.‡ In the treatment of hepatic abscess Dr. Budd dissuades surgical interference until redness and œdema of the integuments point out that adhesion has taken place between the opposing surfaces of the peritoneum.

* Op. cit. Nov. 1845. † Lancet, Sept. 12, 1845. ‡ Lancet, June 7, 1845.

60. A communication upon hepatitis, as it appears in Algiers, is furnished by M. Casimer Broussais.* The disease appears to manifest itself much in the same way, and with the same symptoms, as in India; the treatment, however, adopted by M. Broussais is different from that followed by British practitioners. This writer likewise notices the evident connexion between hepatitis and dysentery; in five cases only out of sixty-six is there no mention of the latter symptom. Antiphlogistic measures constitute with M. Broussais the principal means of treatment. General bleeding should be had recourse to, unless the patient be too debilitated, or the inflammatory symptoms be moderated, in which cases leeches should be applied to the right hypochondrium. General and local bleeding are so efficacious in the treatment of hepatitis, that we may always calculate on obtaining a notable amelioration by these means, the liver diminishing considerably in size. But therein does not consist the principal difficulty of the treatment; it is the complete eradication of the disease which it is difficult to obtain. The symptoms seem to give way to the means employed; the local pain disappears, the appetite returns, the patient fancies he is well, and only thinks of eating; but the liver is still found large, and painful on percussion—it is still inflamed. If therapeutic agents are suspended, if the diet is increased, and the patient is allowed to consider himself cured, or convalescent, a relapse occurs; and, after several relapses, an incurable abscess forms. As long as any symptom of hepatitis exists, the disease should be treated after this manner—the diet must be light, and recourse had to small local bleeding, to blisters, to cauteries, to mercurial frictions, or to frictions with the iodide of potassium. Purgatives may be tried, but with precaution, as the stomach often, and the large intestines always, are either the seat, or may become the seat, of inflammation. "Mercurial frictions, tried on five of my patients," says M. Broussais, "gave rise in four to an inconvenient salivation, notwithstanding the return of a few bilious stools, which, it must be confessed, alternated with constipation." Poultices applied constantly on the region of the liver, and baths, are of great use. Opium, or the salts of morphia, are often very beneficial to soothe pain and produce sleep. The same measures are also appropriate for the treatment of the dysentery, if it continues to complicate the hepatitis. With M. Broussais' patients, the predominance of hepatitis appear to suspend dysentery, but the latter disease seemed sometimes to have a tendency to reappear, and, in two fatal cases, it went on increasing in gravity to the end. In cases of abscess, the author states the abscess must be opened externally as soon as the fluctuation is evident.

61. *Cirrhosis.*—The diagnosis of this condition of the liver is thus stated by Dr. Budd. Slight sallowness of the complexion, a dull pain in the right hypochondrium, with occasional feverishness, in a person above 30 years of age, who has long been in the habit of drinking spirits to excess, are almost conclusive evidence of the existence of cirrhosis, even before there is any direct proof that the circulation through the liver is impeded. When ascites occurs the diagnosis is rendered more conclusive. The only disease likely to be confounded with cirrhosis, after the occurrence of ascites, are chronic peritonitis and malignant disease of the liver. The former is distinguished by the presence of hectic symptoms, which are not usual concomitants of cirrhosis; the fluid moreover is seldom so abundant in peritonitis, nor is it so persistent: the history of the individual likewise assists in the diagnosis. In cancer of the liver the dropsy is seldom so

* Journal de Médecine, Aug. and Sept.

extensive as in cirrhosis; the liver moreover grows gradually larger, and may eventually be felt below the ribs. In cirrhosis the contrary takes place. In cancer there is usually hectic and sweating. In cirrhosis the skin is dry and rough.

In the treatment of cirrhosis Dr. Budd agrees with Dr. Corrigan* in the propriety of the local abstraction of blood, but cautions us against the too free use of the remedy. Mercury and iodide of potassium are necessary adjuncts, the former carried to slight salivation. After ascites has supervened, the author remarks that much harm may be done by depletory measures, courses of mercury, &c., and recommends warm baths, mild diuretics, and careful attention to diet.

62. *Jaundice.*—A fatal form of jaundice is described by Dr. Budd, which does not appear to be of general occurrence. It appears to depend upon a serious disorganization of the hepatic cells, independent of inflammation, and giving rise to a softened condition of the organ. Several cases are recorded by the author, the course of which was as follows. The jaundice supervenes somewhat suddenly, the colour of the skin being intensely yellow. There is little or no fever, nor tenderness of the abdomen, and the pulse is not usually above 70 or 80. Soon, however, symptoms of poisoned blood begin to show themselves, the stomach becomes excessively irritable, delirium sets in, and the patient eventually dies comatose, with or without convulsion. A remarkable peculiarity in this form of jaundice, mentioned by Dr. Budd, and which we have ourselves witnessed, is its tendency to attack several members of the same family. Medical treatment has but little influence over this fatal disease; the cases which recover appear to do so from a spontaneous subsidence of the destructive cellular action, whatever it may be, rather than from any tangible advantage from medicinal means.

M. Decaisne† seeks to demonstrate that icterus does not always depend upon biliary derangement; but that there is one form of the disease in which the discoloration of the skin is produced by some change in the constitution of the blood, and is altogether unconnected with a redundancy of bile. It is obvious, however, that the latter affection, which he calls idiopathic icterus, and which consists in a *sallow* alteration in the colour of the integument, has no title to be included in the same class with jaundice properly so called; but is merely the result of a cachectic condition of the body in general, in which less blood, or blood of an altered character, circulates in the cutaneous vessels.

It is asserted by M. Loujon,‡ that a yellow discoloration of the palate invariably precedes the icteric tinge of the rest of the body. He maintains that by this appearance an attack of general jaundice may be predicted with certainty.

63. *Fatty Liver.*—Professor Schlossberger§ endeavours to give the following explanation of the adipose liver occurring in phthisis:

The frequent combination of pulmonary phthisis, with fatty infiltration of the liver (from the nutmeg liver to complete fatty degeneration), indicates a physiological connexion between the liver and lungs. Antagonism is certainly shown between these two organs, inasmuch as both excrete carbon and hydrogen from the organism, though by opposite means, and an increased function of either organ generally causes diminished function in

* Half-yearly Apstract, &c. Vol. I. p. 41. † Gazette Médicale, Mai 17, 1845.
‡ Gazette Méd. No. 17, and Encyclographie des Sciences Médicales, Mai.
§ Archiv fur Physiol., and Med. Times, Oct. 18, 1845.

the other. It is, therefore, perfectly reasonable to assume an increased hepatic function during the tubercular disorganization of the lungs, and the adipose degeneration of the liver forms a good confirmation of that conclusion. It is only to be regretted that the well-formed deduction shows some deficiencies, if subject to closer examination! For it is not only unproved that a diminished absorption of oxygen, or exhalation of carbonic acid and water, takes place in pulmonary phthisis; but, on the contrary, many consider the proximate cause of phthisis an increased absorption of oxygen. Even Andral's theory suffers from the inexcusable fault of considering the fatty infiltration of an organ as the consequence of an increased function; whilst, on the contrary, excessive accumulation of fat not only causes a retrocession of the vascular substance, but also the real or potential destruction of numerous parenchymatous cells, and thus it certainly rather induces a diminution than an increase of the specific function of freeing the organs from carbon and hydrogen. If we compare the daily increasing prevention of biliary secretion from the blood, with the complement by the added deposition of fat into the cellular interstices, we cannot retain our doubt whether this complement equals in quantity the amount of diminished biliary secretion. The former theory, already shaken by the above, is perfectly refuted through the proved assertion of Rokitansky, viz. that adipose liver not only belongs to pulmonary tuberculosis, but essentially to tubercular dyscrasy in general, whether it may be located in the lungs, the intestines, the lymphatic glands, bones, or other organs. Instead of that disproved theory a probable explanation of the frequently combined pulmonary phthisis might be given thus: *that considerable tubercular depositions, being albuminous or fibrinous exudations, produce a diminution of proteine in the blood, consequently* the other constituents of the blood, and particularly those of the fat, are caused to preponderate. The fatty degeneration of the liver would thus be the result of the sanguineous composition, consecutive to the tubercular (albuminous) dyscrasy, and a localization of the dyscrasy in that organ, which is no doubt immediately connected with the formation and consumption of fat. That such depositions of fat correspond to a distinct composition of the blood (adipose dyscrasy), is also confirmed by the acute fatty infiltration of the liver, observed by Rokitansky, appearing with inflammatory symptoms. As in real inflammations the blood contains an abnormal amount of fibrine, which is deposited by an operation of nature; so in these fatty infiltrations, the local accumulation of fat is the consequence of an excessive proportion of fatty matters in the blood."

The explanation of the fatty liver of phthisis, derived from the antagonism of the lungs and liver, is shown by Dr. Budd to be untenable, for as he observes, in organic diseases of the heart, and in asthma, where the office of the lungs is not unfrequently as much interfered with as in phthisis, the liver does not become fatty. Still further refutation is also afforded by the fact noticed by Rokitansky, that fatty degeneration of the liver is found in conjunction with tuberculous disease of other organs; as the mesentery for instance, where there are no tubercles in the lungs. The theory favoured by Dr. Budd is that the fatty accumulation is in some manner connected with the hectic and wasting of phthisis, in which the fatty matters distributed throughout the body generally are reabsorbed into the blood, and become entangled in the hepatic cells, in consequence of the large size of the oil globules. This question, however, is, he admits, far from distinctly cleared up.

64. *Diseases of the pancreas.*—In 'Casper's Wochenschrift,' No. 17, Dr.

Melion, of Freudensthal, has published an essay, with the object of giving more precision to the diagnosis of pancreatic diseases. Four cases are recorded, in two of which he was able to verify his observations by *post-mortem* examinations. The symptoms were pain in the epigastric region, vomiting of albuminous fluids, constipation alternating with diarrhœa, fixed pains in the loins and shoulders, rapid emaciation, and great mental depression. In the first fatal case the pancreas was found adherent both to the liver and stomach, and was of a cartilaginous hardness; in the second, the organ contained a cavity in its centre, filled with an ichorous fluid. [It is to be feared that in the catalogue of symptoms above mentioned, there is none which can be considered as in the slightest degree aiding the author's object. Dr. Dick (Medical Gazette, October 1845,) is, beyond doubt, correct in the statement that there is no single symptom strictly indicative of pancreatic disease, and that no system of treatment, therefore, can be laid down.] M. Cenric* has noticed the connexion between pancreatic disease and spermatorrhœa.

§ V.—*Diseases of the Genito-Urinary System.*

65. *Hæmaturia.*—An affection analogous to that which occasionally prevails epidemically in the Mauritius has likewise been met with in Brazil by M. Sigaud.† It consists in the discharge of bloody urine, and is most frequently observed in females. The author admits two varieties of the disease, one of an active or sthenic type, in which the urine is distinctly sanguineous; the other passive, in which that fluid resembles the chylous, or milky urine of authors. The disease does not appear to be incompatible with the enjoyment of health, and is referred by the author, as well as by MM. Rayer and Orfila, to an imperfect sanguification of the chyle. The best treatment is found to be generous diet, with a combination of iron and quinine.

66. *Morbus Brightii.*—A case of this disease has lately been recorded, which assumes a high degree of interest, in consequence of the symptoms having given rise to a suspicion of narcotic poisoning. It is as follows:—A man who was known to have been labouring under diarrhœa, went to a druggist, and obtained a draught containing laudanum, in order to tranquillize the bowels. He was shortly after seized with stupor, laborious and occasionally stertorous breathing, sluggish pupils, and oppressed pulse. He was treated for narcotic poisoning, but without effect. After death no lesion of the brain could be discovered, neither was any trace of opium to be found in the stomach; but the kidneys were in an advanced stage of granulation, and nitrate of urea was clearly ascertained to exist in the brain. Some very apposite remarks are appended to the case, contrasting the symptoms with those of undoubted poisoning by laudanum, by which it will be seen that, although the supposition was warranted by the history, there were many discrepancies in the symptoms.‡

66. *Alkaline urine.*—Dr. Krukenberg§ calls attention to the fact, that the urine is often rendered alkaline by eating fruit, and warns us to take this into consideration in forming a diagnosis in all diseases in which alkaline urine is liable to occur, as in simple chronic nephritis, and spinal disease.

* Il Raccoglitore Medico, and Gazette Médicale, Sept. 28, 1845.
† Du Climat et des Maladies de Brezil, &c. 1845.
‡ Med. Gaz. Sept. 27. § Henle's Zeitschrift, and Medical Times, Aug. 16.

§ VI.—*Diseases of uncertain or variable seat.*

68. *Gout.*—Dr. Robertson, of Buxton, has recently published a work upon this subject, which may be advantageously consulted as a book of reference by those who are frequently engaged in the treatment of the disease. It is many years since an extended work upon gout has made its appearance, and it would seem, from this fact alone, either to have become a less common disease, or that the principles of its treatment are so well established, as not to require further elucidation. It will, however, be made obvious, by a perusal of Dr. Robertson's volume, that the light which the progress of animal chemistry has thrown upon this in common with many other diseases, has made it requisite to be considered under new aspects. Dr. Robertson appears to be thoroughly imbued with the importance of the chemico-pathological doctrines of the Giessen school, and has not failed to give them a prominent and at the same time not exaggerated position in his chapter on the history and nature of the disease. The chapter on treatment is very complete, and bears evidence of being the production of a man of unusually extensive experience in the management of gouty affections.

69. *Scrofula.*—M. Sandrat, in consideration of the great expense attending the exhibition of iodine in scrofula, more especially in charitable institutions, has endeavoured to find a substitute in the extract of walnut leaves, first recommended by Negrier. His experiments with this medicine appear to be to a certain extent satisfactory; but it must be allowed that the exact value of any remedy is difficult to be ascertained, in a disease in which a nutritious diet and pure air are alone able to effect so much. (25)

70. *Diabetes.*—Some useful hints on the treatment of this unmanageable disease will be found in a former part of the present volume (art. 27), from the pen of Dr. Rees.* He particularly objects to the plan of submitting the patient to a diet entirely restricted to animal food, stating that he has seen those cases do best in which there has been a judicious admixture of vegetable food. As medicinal agents, he appears to place the greatest confidence in Dover's powder and magnesia.

A case is related in the 'Dublin Medical Press' of Nov. 12, in which the saccharine character of the urine almost entirely disappeared, and the fluid regained its normal specific gravity, under the exhibition of grain doses of the acetate of lead. [There is room for considerable doubt as to the real influence of the medicine in producing this effect in the above case, as we have sometimes seen all trace of sugar disappear immediately before death, and under various systems of treatment.]

§ VII.—*Diseases of the Skin, &c.*

71. *Porrigo.*—The minute divisions and subdivisions to which the diseases of the skin have been submitted by various systematic writers, has ever been a source of inextricable confusion to the student. Scalp eruptions in particular are open to this objection, and, important as they are, in private practice more especially, their study has, from the *artificial* complexity of their arrangement, been regarded with distaste or neglect. Much praise is therefore due to Dr. Corrigan, for his attempt to render our knowledge of the porriginous eruptions more precise, and their diagnosis

* On the Analysis of the Blood and Urine. 2d ed.

more easy of accomplishment. The true character of porrigo is not that of a pustule, as stated by Bateman and others, but that of a true vegetable production, in the form of a cryptogamic plant, as has been pointed out by Dr. Bennet, of Edinburgh, and M. Gruby. The microscope, therefore, will in all cases settle the question of the porriginous character of a given eruption. Where nothing more than an amorphous mass, resembling the debris of pus-globules and epithelial scales, is to be seen, the case may safely be pronounced to belong to the family of impetigines; where, however, the cryptogamic plant is discovered, no doubt can be entertained of its porriginous nature. Dr. Corrigan does not believe that porrigo is contagious, but, as his opinion is founded upon the assumed failure of inoculation, it is but right to state, that since that opinion was expressed, inoculation has been tried with complete success, both by Dr. Remak, of Berlin, and by Dr. Hughes Bennett. The description of the experiment of the latter gentleman is to be found in a recent number of the 'Northern Journal of Medicine.'* In the treatment of porrigo Dr. Corrigan is in the habit of using an ointment composed of from five to ten grains of the oxymuriate of mercury to an ounce of lard. (28.)

72. *Lupus.*—The advantage of issues in the treatment of this obstinate disease is spoken of by Dr. Kennedy, who mentions an isolated case, in which the remedy appeared alone to bring a cure, after every other plan of treatment had failed. (30.)

73. *Pellagra.*—The more southern parts of France have within the last few months been visited by an epidemic of this loathsome disease, the ravages of which were so extensive as to demand the investigation of a special commission. A report was accordingly presented to the Académie Royale de Médecine, by MM. Jolly and Gendrin.† The investigation of these observers, as also those of M. Roussel, appear to render it probable that the production of the disease is connected with the cultivation of maize as an article of food, since they have found that the disease prevailed wherever that grain was grown. For example, pellagra appeared in Spain at the close of the sixteenth century, simultaneously with the introduction of maize into the country. In Italy the same connexion is accurately traced by the dates; in short, wherever M. Roussel pushed his inquiries, he has discovered a parallelism between the two facts. A similar opinion had been expressed by Thouvenet‡ as far back as the year 1798. The explanation of the fact appears to be that the disease depends upon deficient alimentation, and that maize contains a less proportion of nitrogenized principles than any other grain.

74. In concluding this section of our Report, we beg to call attention to a small work lately published by Mr. Erasmus Wilson,‖ upon the management and maintenance of a healthy state of the skin. Although written in a popular style, and therefore admirably adapted to further the humane attempts of the Legislature in improving the hygienic condition of the population, it contains much information which will prove very acceptable to the medical reader.

* September 1845. † Seance 3d, 10 Juin. Bulletin des Acad. Août, 1845.
‡ Traité des Climat. de l'Italie. ‖ Practical Treatise on Healthy Skin, &c.

II.

REPORT ON THE PROGRESS OF SURGERY.

BY HENRY ANCELL, ESQ., M.R.C.S.

The surgical extracts of the present volume, with the following Report, will be found to contain more of the Ars Chirurgiæ than of that which properly belongs to surgery as a science; but we believe that, in this respect, it faithfully represents the labours of surgeons during the preceding half-year. Very few works have reached us on the general subject, or on any of its great divisions treated in full. The translation of Chelius is still in progress; but apart from Mr. South's notes, it chiefly embraces the accepted principles of surgery, which it is not necessary to comprise in this Report. Both the text and the notes must be regarded as important additions to our surgical literature, and we have rendered them useful, by collating with them many of the cases and articles on specific subjects, which have been recorded in the British and Foreign periodicals. Admiring the perfection of the art, which, in the hands of M. Jobert, can restore health and comfort to a fellow-being apparently doomed to an existence of nearly unendurable misery, an instance of which will be found in the present volume, still correct principles most especially deserve to be consecrated; and in the abundance of surgical literature which must necessarily pass in review, our selections will always be made with especial regard to this truth. The practical application of sound principles in the treatment of inflammation and its consequences—ulceration and other lesions—is of far more consequence to the interest of humanity than the most splendid operative achievements. Miller's 'Principles of Surgery,' in which the recent discoveries of physiologists are in many important respects brought to a practical bearing, has led us into this reflection.

We find Professor Miller admitting into his definition of inflammation "a perverted condition of the *blood*," as well as of the blood-vessels of a part, and giving due importance to the fact, that the fibrine of the blood is increased not only in quantity, but also in plasticity, and in the tendency to become organized. So far as the heat of inflammation is actual, this is referred to the blood itself, and many of the effects of inflammation are satisfactorily accounted for by our knowledge of the properties of the liquor sanguinis, of plastic fibrine, and of the blood-corpuscles. A very clear view is also taken of the ulcerative process, of suppurative abscess, and gangrene. The symptoms of inflammation, as also the effects of remedies in the management of the inflammatory process, and of its sequelæ, and the subjects of irritation and shock, are explained on the principles which precede. Miller's work, like that of Chelius, will be rendered most available by us in the manner indicated; but we regard it as another important addition to our surgical literature, and shall no doubt have occasion to refer to it as an authority in many of our future volumes. In collating the various novelties in surgical science, and placing them before our readers, we must not

be understood as pledging ourselves to the belief that they are all improvements; and it will be perceived, that while we record every important suggestion from foreign sources, and are anxious to do justice to the advancement of learning and to the efforts of genius wherever derived, we are not disposed to allow opportunities to pass of vindicating the claims of British surgery.

§ I.—*Surgery of the Head and Neck.*

1. *Fractures and injuries.*—In addition to the extracts in the present volume (53, 83,) numerous cases are recorded in the periodical press. For the most part they present nothing new; but they illustrate received doctrines, have been treated according to the usual methods, and followed by the ordinary results. Amongst the most interesting is a case by Mr. C. S. E. Ford, of the Madras Medical Establishment,* of gunshot wound of the brain, with extensive fracture of the cranium, followed by complete recovery, which may serve well as an additional exemplification of the vast amount of injury the head may suffer without fatal results. The os frontis was greatly comminuted, the right orbit depressed, and a fracture extended from the os frontis, upwards and backwards, to the lambdoidal suture; cerebral inflammation supervened, and during the treatment pieces of brain passed from the wounds caused by the bullet. The patient was in the first instance treated antiphlogistically, and then supported. Both mind and body were perfectly restored. This case corresponds with one which not long since came under our own care. A boy fell thirty feet, and met with a comminuted depressed fracture of the os frontis. Several portions of bone were removed, and brain escaped for many days; he was treated antiphlogistically, and kept for some time at what might be termed the point of acute starvation; he recovered perfectly, and his intellects were unimpaired.

2. *Resection of a carious portion of the left parietal bone.*—The following case, selected for a clinical lecture by Professor Heyfelder, of Erlangen, deserves notice.† A woman, aged 36 years, suffered for a long time with pain in the left side of the head, and deafness. A tumour presented at the part, which being opened, gave rise to an ulcer, at the bottom of which the bone was ascertained to be carious. M. Heyfelder separated a portion of the parietal bone, 15 lines long and 13 wide, which was carious throughout; the dura mater having a granulated surface. The wound healed, and the woman was cured of her headache and deafness.

3. *Excision of the inferior maxilla.*—As an example of successful operative surgery, M. Blandin brought before the Royal Academy a woman from whom he had removed the whole of the left side and a portion of the body, to the level of the commissure of the lips on the opposite side, of the inferior maxilla.‡ The principal branches of the facial nerve had been preserved, and paralysis of the muscles of the face avoided. A ligamentous band occupied the place of the portion of bone removed, and by solidifying, in some measure supplied its functions.

Mr. Rynd, of the Meath Hospital, Dublin, has also performed the operation of excision of the greater part of this bone, for the removal of an osteo-sarcomatous tumour, weighing about a pound and a half. He first made a vertical incision over the symphysis, and, instead of including the tumour in two semicircular incisions, as recommended in surgical works, he cut from over the prominence of the joint, for a short distance vertically downwards, and then made a semicircular sweep, to unite the angle of the

* Monthly Journal of Medical Science, Sept. 1845. † Gazette des Hôpitaux, July 19, 1845. ‡ Archives Générale, July 1845. § Med. Times, Sept. 13, 1845.

flap made by the first incision. In order to finish the operation at the joint, instead of cutting through the capsular ligament with scissors, and then using a probe-pointed bistoury, as recommended by M. Malgaigne and others, Mr. Rynd had an instrument constructed resembling the ordinary dressing spatula, being somewhat thicker, blunt at the edges, but with its rounded extremity sharp enough for cutting. This instrument was passed between the bone and the internal pterygoid muscle, the internal maxillary artery, and the other structures, on the inner side,—loosening their connexions with the ramus of the jaw. The joint was thus divided from its anterior aspect without any danger of wounding the artery, and the operation in this manner completed.

4. *Hydrocephalus.*—Mr. George Chater, surgeon, of Norwich,* records a congenital case of this disease treated by puncturing the walls of the cranium with a grooved needle, having a spear-shaped point, cutting like a common lancet to the shoulder, the diameter of the spear being equal to the circumference of the grooved needle. About four ounces of fluid were at first drawn off. The puncture was repeated after four days, and six and a half ounces evacuated. Four threads were then introduced, to act as a a syphon. The case went on favorably for several days, but ultimately the child died comatose.

5. *Facial abscesses.*—In the 'Northern Journal of Medicine,' Dr. Adams records a case of abscess behind and below the angle of the lower jaw, occurring after scarlatina, in a child aged 15 months, with which a blood-vessel communicated. The abscess burst into the throat, and the child died of hemorrhage. The case illustrates, in Dr. Adams's opinion, the necessity for the early opening of abscesses seated under the resisting fascia of the neck, particularly when they take place in children of weakly constitution, or debilitated by disease.

6. *Indurated tonsils.*—Dr. Huss, of Stockholm, has employed successfully a method recommended by Professor Brunting. It consists in introducing the index-finger into the throat, and compressing the indurated gland for some minutes, augmenting the pressure gradually, and repeating it several times a day. After some days the tonsil softens, absorption commences, and the surface shrinks; at this time irritating gargles should be employed to promote the contraction of the tissues. This treatment should always be adopted before excision is resorted to; it is most successful in children; but requires to be persevered in for several weeks without interruption.

7. *On the extraction of foreign bodies from the meatus auditorius externus.*‡—Dr. Sims remarks, that the means of extraction recommended in books, in these cases, are often nugatory and inapplicable, and sometimes injurious. He urges the use of the syringe in preference to probes, forceps, hooks, scoops, curettes, and every other instrument, as being the easiest safest, and quickest method, and applicable in all cases, whether the foreign body be large or small; light or heavy; irregular, even, smooth, or angular; occupying a small space, or plugging up the meatus entirely; of recent introduction or of long standing; or whether it be complicated or not with symptoms of a local or general inflammatory character. He wishes, however, by no means to be understood as objecting to the *forceps* when *properly* managed, for that instrument is generally the indispensable adjuvant of the syringe. Velpeau relates "the thousand different means that have

* Provincial Medical and Surgical Journal, Oct. 1.

† Gazette des Hôpitaux, Aug. 12, 1845.

‡ American Journal of the Medical Sciences, April 1845, p. 336.

been proposed "by Archigenes, Celsus, Alexander, Mesue, Hameck, Rhazes, Verduc, Donatus, Fabricius, Paulus, &c. &c.; some of which are certainly sufficiently fanciful and absurd. Yet in all this formidable array of authors, with their equally formidable array of instruments, the syringe is not to be found."

Even modern authors, including Mr. Pilcher, recommend various mechanical contrivances, as "bent levers," "steel stylets," "small, obtuse, flattened, bent probes," "crooked wires," &c.; but they make no mention of the syringe. The difficulty of dislodging foreign bodies from the meatus is admitted by all, and even the syringe may fail; but this can seldom happen where the philosophy of its use is properly understood. Dr. Sims very properly remarks, that whoever follows the loose direction of "syringing the ear forcibly," will often be deceived, a sufficient explanation of which will be found in the anatomical structure of the organ.

The direction of the meatus ought to be changed, "by laying hold of the lower portion of the anti-helix, and pressing the dorsum of the concha forwards, while we put the whole organ forcibly on the stretch, pulling it outwards, upwards, and backwards; thus making the canal a straight line of uniform diameter, when it will be found comparatively easy to throw an injection to its very bottom."

"If the foreign body be small, the water will dislodge it as it rebounds from the membrane;" if large, plugging up the passage, two or three injections will be certain to change its relative position, so as to allow the next to pass by it, impinge on the membrana tympani, and wash it out in its retrograde course; or so far dislodge it as to bring it within reach of the forceps.

The syringe should hold little more than two drachms, should have a long tube of small diameter, and the piston should, of course, be perfectly air-tight. Water thrown from an instrument of this kind, suddenly and forcibly, does not pass in a long, slow, continued stream, but strikes, as it were, at once, and with great power. The stream will often pass, undivided and in full force, past the foreign substance, so that its "reflex action" is almost as strong as its direct force, and this renders it preferable to a large syringe, where the continued stream of a large volume of water, striking in a direct line with greater momentum, counteracts entirely the retrograde force.

Dr. Sims gives several interesting cases of various foreign bodies which have been lodged in the ear, sometimes for a great length of time,—one of which will be found in the Abstract (78).

Another American author, Dr. Bryan,* appears to attach much more importance to the use of instruments. He states that he has been enabled to extract cherry stones and grains of corn with great facility, by means of an instrument used by dentists for the purpose of cleansing the cavities of decayed teeth, which is to be carefully introduced, and pushed forward, until it reaches the substance, when, keeping the curved edge towards the axis of the meatus, it may be rapidly passed beyond the body, by which the surgeon obtains a complete control over it, and by traction can easily dislodge it from its bed.

8. *Hare-lip.*—In the Bulletin of the Academy of Medicine there is a long article by M. P. Dubois on this subject, and especially on the most suitable period for the operation.† After mentioning several cases in which this surgeon operated a few days, and even a few hours, after birth, we are informed that the operation was done in the ordinary way, but

* The Medical Examiner. † Annales de la Chirurgie, Juin 1845.

that the needles employed were extremely fine, and not so long as usual. An uniting bandage was also dispensed with ; its presence, by provoking motion in the infant, being rather injurious than useful. Neither the reality nor the degree of pain produced by the operation at this early period of life is disputed by M. Dubois, but it is remarked, that probably there is less consciousness of the pain, and certainly there exists neither the remembrance nor the anticipation of it, and sensation must subside very rapidly, for, in fact, sleep quickly follows the operation. In two cases the patient went to sleep immediately after the application of the last needle and the first turn of the silk. Hemorrhage was very slight, except in one case. In two cases blood was swallowed, without any bad effect. In reply to those who affirm that the softness of the tissues at this early age is an objection, M. Dubois, admitting that the tissues have a remarkable softness, observes that this depends on their extreme vascularity, which is a circumstance in favour of their prompt union ; and as to their liability to be cut through, the cases prove that it does not exist. The quickness with which adhesion takes place, is such as to permit the first thread to be changed for one applied looser after twenty-four hours. Suction, either natural or solicited by artificial means, was in no case prevented by the operation, proving that the fears of the adversaries of its early performance are almost without foundation.

It is by no means necessary to keep the patient from food for several days, a measure which can only have the injurious effect of making it cry, besides which starvation is with difficulty supported by these young subjects. Sleep, remarks M. P. Dubois, is nearly the habitual state in the first days of life, and is scarcely interrupted, except to satisfy the wants of nature, and the operation scarcely at all altered this happy condition, so favorable to the results. M. Dubois affirms that the traces of the operation are less apparent and less persistent than when performed later in life, and that the objection of Dupuytren, in his 'Leçons Orales,' that the chances of mortality, so great in infantile life, are increased by it, is invalid. In none of the instances given was there any considerable disturbance of health. But the chances of mortality are perhaps greater in infants affected with this deformity, which is frequently complicated with other obvious imperfections, and perhaps with concealed derangements which may be incompatible with life. The operation will not increase the fatal consequences of the latter affections, but in anticipation of their existence, M. Dubois makes the reservation that it would be prudent to abstain from operating during the first days of existence in very delicate infants, and in those prematurely born ; and also to defer it in seasons when epidemic affections, and particularly erysipelas, prevail.

M. Roux admitted that his opinions on this subject have undergone a considerable change, in spite of himself, during the last twelve or fifteen years, but he could not regard the operation in so trivial a point of view as would appear from M. Dubois' observations. In one instance, an infant operated upon by him, under similar circumstances, died of hemorrhage, but he admitted the fault might have been his own. In another case it did not enter into his mind to put the patient to the breast,—the infant would take no other nourishment, and died.

In support of M. Dubois' views M. Malgaigne has published a case of hare-lip, complicated with extensive division of the maxillary bone, operated upon nine hours after birth, and resulting in perfect union.* M.

* Journal de Chirurgie, July 1845.

Malgaigne considers that the reasons advanced for operating early in simple cases are much stronger in its favour for those which are complicated. In the case in question the operation was performed with the greatest ease, the immediate effect was beautiful, the enormous breach in the bone was seen almost daily to contract, and its complete success was certain, although the child died thirty days afterwards, from causes totally unconnected with the operation.

In an article in the 'Gazette des Hôpitaux'* it is remarked that, although in uncomplicated cases no great advantage can be got by operating immediately (the day of birth or the day afterwards,)—when complicated with a division of the palatine arch and of the velum palati with separation of the bones, the difficulty of suction and the obstacles to effective nutrition are so many reasons for its immediate performance. The age of the patient gives many advantages to the healing process, and no sooner is the operation performed than the space formed by the separation of the bones begins to diminish. Whereas, on the other hand, there is not one contraindication. It is true that crying and suction tend to separate the cicatrix, but this accident forms a rare exception, and the inconvenience of these accidents has been greatly exaggerated.

It is here stated, that infants immediately after birth will bear abstinence much better than when older. They will even remain pretty comfortable two or three days without sucking, by giving them a little milk and water, and this period is quite sufficient for the cicatrization of the wound; and, moreover, an infant a day or two old cries much less and more feebly than when three or four months or years have elapsed.

In nourishing infants with complicated hare-lip, M. Dubois employs a long sponge fixed to the extremity of the sucking bottle. This sponge is made to reach as far back as the pharynx, and being applied along the cleft, closes it when the mouth is shut in the operation of suction.†

To prevent the notch or loss of substance, which is so frequently left at the inferior part of the cicatrix after the usual operation, M. Malgaigne‡ adopts a very simple process. Instead of refreshing the edges from below upwards, he incises them from above downwards, leaving the thread detached from the bleeding edge, adhering by a small pedicle. The incisions made, he unites the wound with needles as in the ordinary process, then, by bringing the two little threads over the inferior angle of each labial edge, he can cut and trim them at his pleasure, and fill up the depression alluded to; he can also, when the division is situated in the median line, reconstitute the central lobule of the upper lip. M. Malgaigne has been completely successful in numerous cases, and M. Guersent has operated four times. The operation was of longer duration, but he regards this as a trifling disadvantage, completely counterbalanced by the perfection of the results.

In this operation M. Malgaigne also takes the following precaution. He passes the needles, not through two thirds or three quarters of the thickness of the lips, but through the whole thickness, which does not constitute the slightest obstacle to the exact apposition of the living surfaces. He was led to this by considering attentively the position and motions of the tongue. Owing to the separation of the bones, its tip is brought directly against the posterior surface of the labial division, and in the instinctive motions of suction would strike the wound on projecting forwards, and

* May 13, 1845. † Gaz. des Hôpitaux, May 24. ‡ Ib. June 8.

lick it on being drawn backwards. The two needles form a sort of partition behind the wound, which they protect from the tongue. M. Malgaigne is convinced that this precaution contributes greatly to the solidity of the union.

In simple cases no bandage whatever is employed, in others a narrow bandage only, the middle placed behind and towards the top of the head over the child's cap, and the two ends brought forward, passing obliquely over the jaws, and crossing on the superior lip under the nose.

9. *Tracheotomy in Croup.*—Professor Trousseau* has written a valuable paper on this subject. He regards the operation as not dangerous, and the ill success which has attended its performance in laryngitis and croup, as arising from its delay until the phenomena of asphyxia set in. In 121 cases M. Trousseau had but one fatal accident during the operation. An adult died the instant an incision was made in the skin. In 150 operations, 39 children have been saved. M. Trousseau always operates very slowly, and never makes a stroke with the knife without being directed by the finger and the eye. He is thus certain of avoiding the left carotid, if given off from the innominata, and crossing the trachea. He has several times had the innominata under the edge of the bistoury, but on bending the incision a little to the left, and separating the tissues with the fingers, the operation has been completed without fear or accident. "Surgeons," M. Trousseau remarks, "who pride themselves upon performing the operation with marvellous rapidity, and plunge the bistoury boldly into the trachea to divide it from below upwards, as soon as they have finished the incision of the skin, will deplore this imprudent and useless celerity." Ill effects have never resulted from blood accidentally introduced into the trachea, when the lips of the wound have been held open or the canula at once introduced. Topical applications may be introduced in the after-treatment, through the canula, as the injection of warm water in small quantities, to relieve irritation and assist the expulsion of false membranes; or a weak solution of nitrate of silver; or a stronger solution (1 part to 5 of water) may be applied by means of a little mop, at first three or four times, and afterwards once daily.

§ II.—*Ophthalmic Surgery.*

10. *Purulent Ophthalmia.*—After describing five cases, three of which were clearly produced by the application of a morbid secretion to the conjunctiva, Mr. Lawrence† remarks, that so long as the cornea retains its transparency the eye is safe. He speaks in favour of a circular excision around the cornea to relieve chemosis, in preference to Mr. Tyrrell's plan of radiated incision. Even mild solutions—two to four grains in the ounce—of nitrate of silver, sometimes bring back the inflammation after it has been decidedly checked by other measures, and as an astringent, a solution of alum is safer and preferable. The great objection to the use of nitrate of silver in substance, is the difficulty of preventing its action on the cornea.

11. *Transplantation of the Cornea.*—The possibility of transplanting the cornea is stated to be a question nearly settled,‡ but there are still several points, the determination of which is of much importance for its success. The first is to ascertain to what extent the new cornea maintains its transparency. M. Plouviez remarks, that during the five or six years he has been engaged in "*keratoplastie*," and has performed a great number of operations of this kind, he has not once obtained a perfectly trans-

* Medico-Chirurgical Review, July 1845. † Med. Gaz. July 11, p. 439.
‡ Gaz. des Hôpitaux, Aug. 21, 1845.

parent cornea. In those cases which have succeeded best, the new cornea has always remained more or less opaline. Vision has been more or less established, but always incompletely.

Among the cases reported there is one of a young woman twenty-three years old, who became blind at three years old, in consequence of the smallpox, and in whose eye after having separated the opaque cornea M. Plouviez fixed, by means of four sutures, the cornea of a young dog killed for the purpose. The grafting perfectly succeeded but the operator had to regret that the ultimate result was not satisfactory. The only benefit obtained was that the patient could distinguish day from night better than before, although she was still unable to walk alone. According to M. Fleurens, however, we must still not despair of the success of these experiments; M. Feldmann has long been engaged in them, and appears to have arrived at much more satisfactory results, promising complete success. If so, keratoplastie will be an important acquisition in this branch of surgery.

12. *Ossification and displacement of the crystalline lens.*—A case by Mr. France.* The patient met with a blow on the eye twenty years before, and lost his sight from inflammation. The dislocation occurred about four months ago, and appeared to result from the severance of the lens from its natural connexions, in consequence of a structural change, gradually proceeding from the date of the injury. By Dr. Rees's analysis the lens was composed of carbonate and phosphate of lime and animal matter. The case is interesting, inasmuch as that ossification of the lens is much less frequent than ossification of the capsule.

13. *Cure of strabismus.—Ligatures on the recti muscles of the eye.*—Dieffenbach appears to have been the first, in 1842, to apply a ligature to the divided end of the muscle, for the purpose of rendering the cure of strabismus by operation more perfect. Mr. Wilde, of St. Mark's Ophthalmic Hospital, has been the first to resort to this method extensively in this country. He has employed it in at least eighteen patients, including cases of both convergent and divergent strabismus. When there is reason to believe that division of the tendon will not rectify the deformity, which circumstance may frequently be determined beforehand, the portion of the muscle attached to the sclerotica should be left longer than usual, by dividing it between the hook and its origin, as far back as can be safely managed. Having curved a small sewing-needle, about No. 7, and armed it with a fine ligature, the end of the muscle attached to the sclerotica has to be seized with a fine-toothed forceps, and the thread passed twice through it, drawing it tight the second time, so as to secure firmly a piece of the divided tendon. By this means a power is attained over the globe, which will carry it in any direction. In fixing the ligature, care should be taken to fasten it by a second coil into the muscle, otherwise, if allowed to play in a loop, it will cut through before the object is effected. The loose end of the ligature is to be attached, by means of adhesive straps, to the middle of the nose, or to the malar bone, so as to draw the globe of the eye in the direction required. The length of time it must remain on varies according to circumstances, but, as a rule, it should never be removed while it continues on the stretch, or, in other words, till the eye has completely righted itself, either by the action of the other muscles, or by the fixed position, "the setting," of the globe in its new aspect. The patient appears to experience but little inconvenience. In some instances

* Guy's Hospital Reports, Oct. 1845.

the ligatures have been applied to both eyes, and Mr. Wilde suggests that a ligature might be tried without dividing the muscle where strabismus is caused by permanent spasm, or shortening of the internal rectus, or paralysis of the abductor, and also for the purpose of restoring to a straight position those eyes that have become over-divergent after the usual operation.*

§ III.—*Abdominal Surgery.*

14. *Artificial opening into the stomach.*—Dr. Watson, of the New York hospital, has proposed this operation in some cases of obstructed deglutition.* He has, in the first place, collected a number of interesting cases, bearing upon the question, whether such an operation is warrantable? Incised and gunshot wounds have often penetrated the stomach without producing fatal results, and the recoveries have been estimated at twenty per cent. Plouquet has collected a vast number of such cases, and they occasionally occurred in the practice of Hennen, Dr. Thompson, and the army and navy surgeons, some of whom are said to have often stitched the stomach. Openings in the stomach, the result of injury, or occurring spontaneously, may give rise to permanent valvular or fistulous communications between the stomach and the external surface of the abdomen, which may exist for years without impairing the digestion, and consistently with good health. Several most interesting cases of this kind are also quoted by Watson. Dr. Beaumont's celebrated patient, Alexis H. Martin, is in point. But Dr. Watson cites, from the German Ephemerides, three cases in which this formidable operation has actually been performed for the removal of sharp instruments from the stomach. A young peasant accidentally swallowed a knife; the surgeons of Kœnigsberg advised its removal from the stomach by incision; Daniel Schwahen, a lithotomist, was selected as operator; the operation was performed about six weeks after the accident. An extensive incision, two inches in length, being made longitudinally, the stomach was found empty, and did not present at the wound; the surgeon seized it, and drew it outward with a curved needle; the projecting point of the knife was easily recognised through the coats of the stomach. An incision was made immediately over the instrument, through which the latter was extracted, and found to be about ten inches long. The edges of the wound required no sutures; no serious symptoms ensued, and the patient got well. A young fellow of Prague swallowed a knife nine inches long, the point of which presented a little above the fundus of the stomach, towards its left side, and the handle towards the spine. Two months afterwards it was successfully extracted. A Prussian woman swallowed a knife seven inches long; it remained in the stomach three days without exciting pain; she then felt pricking sensations, and very soon the point of the knife could be felt in the left side. The pains increased; Dr. Hubner made an incision over the point of the knife in the left hypochondrium, on the eleventh day of the accident; he found that the blade had already pierced through the stomach, and had excited slight suppuration around it. The knife was withdrawn with a pair of forceps, and the cure was very prompt.

Dr. Watson infers that it is warrantable to perform such an operation, as an extreme measure, under pressing circumstances. He remarks that the operation itself is trifling, and requires but little anatomical knowledge. Its immediate danger is hemorrhage; but this is not likely to be severe, unless the stomach were penetrated near the upper or lower curvature in the situa-

* Dublin Jour. Nov. 1845, p. 211. † American Jour. of Med. Sciences, Jan. 1845.

tion of the large blood-vessels. Its more remote danger is peritonitis, which may be avoided by preventing the escape of blood, or of the contents of the stomach into the peritoneal cavity, as well during as after the operation; and by avoiding any injury to the omentum, and all undue manipulation with the serous surfaces. It may also be controlled by depletion, anodynes, and other measures. The stomach being necessarily empty under the circumstances calling for the operation, the liver or the distended colon might present; but these organs can be easily avoided or pushed aside. The ultimate danger of the operation is from impaired action of the stomach. According to a case quoted from M. Richerand, this would be more especially likely to happen if the opening were made into the pyloric portion. Other cases lead to the inference that serious nervous symptoms at the time of the wound would be more likely to occur, if made near the cardiac orifice; the place of election should then be equidistant from the two extremities, and midway between the two curvatures at the anterior prominence.

15. *The surgical treatment of hepatic abscess.*—In a review of the Pathologia Indica of Dr. Webb, this subject has engaged attention.* A brief account is given of the opinions of authors, from Hippocrates to Van Swieten, on the subject of puncturing these abscesses; also of the first introduction of the use of the trocar in the latter half of the last century, and the more recent recommendation of the *small exploring trocar.* The following case is adduced from Dr. Webb's collection:—

"A middle-aged soldier, who had been fourteen years in India, was received, on the 21st March 1839, into the hospital, with symptoms of acute hepatitis. On the 23d he had cold shiverings, followed by profuse sweats. On the 30th Dr. Murray, suspecting the existence of an abscess, introduced a trocar, to the depth of an inch and a half, at the lateral part of the thoracic arch, between the eighth and ninth ribs. *About an ounce of very black blood flowed out by the canula, but without any admixture of pus.* A second puncture was made a little more anteriorly, and deep, under the cartilage of the eighth rib; *this gave exit to more black blood,* and afforded great ease, *but still no pus flowed.* Tents of lint were introduced into the wounds, and large poultices applied over the side. The symptoms of suppuration continuing, Mr. Wilkins, the regimental surgeon, having (we copy his report) a strong idea that the common trocar had been too short, on the 5th of April *introduced the one for puncturing the bladder by the rectum,* which, being curved and longer than the other, reached the abscess, and gave vent to a quantity of sanious purulent matter, (about four ounces,) to the great delight and relief of the patient sufferer. On the 11th the long trocar was again introduced, as the discharge had stopped; the punctures were kept open by tents; antimonials and hydriodate of potass were administered; the discharge soon became healthy pus, which gradually lessened in quantity, until it finally ceased on the 10th May, when the wounds became so contracted that the tents would no longer enter, and soon finally closed. The liver resumed nearly its natural size, pressure could be borne without giving pain, the patient's health gradually improved, and he was discharged on the 7th of June; since which time he has been in the performance of all his military duties (now two months), without having required to come back once to the hospital for medicine."

In a second case, several exploratory punctures were made. After the first a little blood only flowed. The new exploratory instrument was then

* Medico-Chirurgical Review, July 1845. Pathologia Indica, or the Anatomy of Indian Diseases, Medical and Surgical, based upon morbid specimens from all parts of India, in the Museum of the Calcutta Medical College. By Allen Webb, B.M.S

pushed into the liver, behind the middle of the side between the eighth and ninth ribs, when pus flowed—not through the instrument, but by the side of it—apparently from having gone beyond the abscess. The explorer was withdrawn, and a large-sized flat trocar introduced, by which eight or nine ounces of pus were evacuated. The symptoms were relieved for two or three days, another exploratory puncture was made; but after a few days the patient died. On dissection a large distinct abscess was found in the right side of the concave surface of the gland, which had very narrowly escaped being penetrated in the exploration during life. It contained nearly a pint and a half of thick yellow greenish pus. Immediately above this was the empty contracted sac of the abscess, which had been opened and evacuated; and at the centre of the upper convex part of the liver was a third distinct abscess, the largest of all, containing nearly three pints of matter. Inspector Murray remarks:—*

"After having seen this dissection, I would hereafter explore to a greater extent any analogous case; and I am moreover of opinion, that all our punctures should be made from the abdominal cavity, entering the trocar or explorer under the edge of the cartilages of the seventh, eighth, or ninth ribs, as circumstances may indicate. We may often, indeed, get nearer to the abscess through one of the intercostal spaces; *and I think primary exploration may sometimes be advantageously made in this situation by a very minute flat canular instrument;* but, from not having seen any patient recover where the matter was evacuated in this direction (through the diaphragm); from finding that the action of the fibres of the diaphragm impedes the free discharge of the matter, somewhat like a valve; from observing that the air sometimes enters the wound when made here; and from considering that the opening is not so dependent through the walls of the thorax as when made through the abdominal parietes; I beg to recommend the latter mode *in all cases;* and I must also say, that I would prefer a long flat trocar to any other instrument, as the stilette can be withdrawn occasionally during the operation, to ascertain if any abscess has been penetrated; and the canula can be left *in situ* afterwards, if thought desirable."

16. *Wounds of the abdomen.*—Dr. Shearman has recorded the following remarkable instance of abdominal injury,† highly corroborative of a remark made in the first volume of the 'Abstract,' p. 222. On Monday night, the 1st February, 1841, James Riley, a powerful little stiff-set man, about 40 years of age, was stabbed in the abdomen with a large pocket-knife. The wound began a little above the internal abdominal ring, on the left side, cut through the whole of the abdominal muscles, was six inches in length, of a crescentic form, and ended a little above the anterior superior spinous process of the left ileum. When Dr. Shearman arrived, the poor fellow had as much of his intestines hanging out as would fill a large wash-hand basin; one of the mesenteric arteries had been wounded, which was bleeding profusely, and the poor man was quite exhausted. The parts were sponged, the artery tied, the bowels returned as well as could be done, a number of stitches put close together through the muscles, and the two edges of the wound united; the abdominal muscles were kept quite relaxed, and adhesive plaster and a bandage applied. He was kept quiet in bed; he had bled so much that some wine and brandy had to be given at first; but as soon as reaction commenced, he was kept strictly under the antiphlogistic regimen. His bowels were moved by injections. He perfectly recovered, and was

* Madras Quarterly Medical Journal, Vol. 2, p. 232.

† Provincial Medical and Surgical Journal, Aug. 27, 1845.

well enough to go to the York assizes the next month, and give evidence against his assailant.

A fatal case of peritonitis, from the lodgment of a calculus in the appendix vermiformis is given by Mr. Bury, of Whetstone.*

The two following cases illustrate two different modes of treating the same injury. A boy, aged four years, was received into King's College hospital† with a punctured wound of the abdomen, three inches above and to the right of the umbilicus; three inches of omentum protruded from the small opening; there was no bleeding, and little pain. As the reduction would have required much handling, Mr. Dyer immediately cut the omentum off to a level with the abdominal parietes; a small quantity of blood was permitted to flow, and then a compress of lint was applied, kept in place with sticking plaster and a bandage, and the patient got well in a few days without a symptom. M. Hippolite Larrey‡ has described a similar case of penetrating wound of the abdomen, with extrusion of the omentum. Moderate efforts at reduction shortly after the wound was inflicted proving of no avail, the protruded part was covered with oiled silk and a poultice, and the case treated antiphlogistically. There was considerable inflammation the first day or two; on the fourth day a healthy suppurating surface was established. By the tenth day it began to retract. A small ulceration formed at the internal angle of the wound. From this time it gradually diminished in size. Nitrate of silver and slight compression were employed. By the thirty-sixth day the tumour was reduced to the level of the skin, and in ten days more the cicatrization was complete. The author remarks that in traumatic omental herniæ, it is not indispensable in all cases to reduce the protruded omentum.

17. *Ovariotomy.*—We have been favoured with a published account of a case by Mr. Southam. The age of the patient was 38 years. The abdomen was distended to at least twice the size of the full term of pregnancy; and, from all the symptoms, the case was peculiarly favorable for the operation. An exploratory incision midway between the umbilicus and pubis being first made, and the peritoneum opened sufficiently to admit the finger, the presenting cyst was punctured with a full-sized trocar. Sixteen to eighteen pints of fluid having been evacuated, the canula was withdrawn, and the opening enlarged in the usual manner, above and below, to the extent of between six and seven inches; the tumour was withdrawn, and the pedicle, which was attached to the left broad ligament, tied and divided, and the margins of the wound immediately approximated, to prevent the ingress of air. After a brief interval the wound was again opened, to remove what blood had escaped internally, and to ascertain that the vessels of the broad ligament were firmly secured. The edges of the wound were then closed in the usual manner, the whole carefully dressed and adjusted, and the patient lifted into bed within twenty-five minutes from the commencement of the operation. On the day following she was bled to fourteen ounces, and antiphlogistic measures, with sedatives, were employed. On the fourth day she felt well enough to sit up; on the fifth the wound was healed, except at the lowest point, all the ligatures being removed; on the fifteenth day she could walk across the room; on the eighteenth day she returned home, a distance of three miles. She gradually improved in every respect; on the forty-ninth day the ligature came away, after which the fistulous opening closed, and the cicatrix of the entire wound does not measure more than four inches.

* Provincial Med. and Surg. Journal, Oct. 1. † Ib. Aug. 20. ‡ Mémoires de l'Acad. Royale de Médecine, vol. 40, 1845.

The tumour was one entire cyst, weighing, with its contents, at least thirty-one pounds. Its structure varied in different parts, being half an inch in thickness near its connexion with the broad ligament, and gradually becoming thinner towards the upper portion, "where it appeared scarcely capable of sustaining the weight of the contained fluid, and, in all probability, would have been ruptured by a slight blow."

An instance of ovarian dropsy proving rapidly fatal, by bursting into the peritoneum, is referred to in the Report of the Liverpool Pathological Society.*

John Dickens, esq., surgeon to the Salop Infirmary, has also published another case of successful removal of this disease. The subject was an unmarried girl, aged 18. The tumour had for many months been hard, and no fluctuation could be detected. The catamenia were irregular, and the health good, till within a short period of the operation. Ultimately a part of the tumour fluctuated, she also began to lose flesh, and her health to decline, and the inconveniences, from weight and distension, were very great. On tapping, at most not more than a quart of fluid was discharged. The patient ultimately measured forty-six inches round the body, and eighteen inches from the ensiform cartilage to the os pubis. The operation was performed on the 22d of August. An exploratory incision of about three inches having indicated that there were no adhesions within reach of the finger which did not readily give way, the incision was extended downwards towards the os pubis, and upwards towards the ensiform cartilage. All adhesions were easily separated with the finger. This done, and the incision being carried to the fullest justifiable extent, the diseased mass would not even then quit its bed. Mr. Dickens now endeavoured to lessen its bulk by means of the trocar, but not more than two pints of fluid escaped, which had no sensible effect in reducing the size of the tumour. The operator's hands were then passed, one on each side of the tumour, deep into the pelvis, and the large firm mass, which at first seemed to be almost distinct from the general swelling above, was raised. The whole tumour was gradually moved forwards and the abdominal coverings being carefully closed behind it, a double ligature of thin but strong *netting twine* was now passed by means of a needle through the pedicle, and then divided. The two halves were separately tied with all the force the operator could exert, and notwithstanding, several vessels, one of which was of considerable size, continued to bleed in one of the portions, after the tumour was detached. Wishing to avoid inclosing the whole of the pedicle in another ligature, all the bleeding vessels were included in one silk ligature, by means of a tenaculum, in the ordinary way. The left ovary was sound. The wound was about fourteen inches long, and was secured with thirteen interrupted sutures. The whole operation did not occupy more than half an hour. The bowels acted for the first time early on the fifth day after the operation; Mr. Dickens having taken care to secure a complete evacuation previously, felt little anxiety on this head. The ligatures on the pedicle came away on the twentieth day, and at the end of three weeks the patient walked about cheerful and happy. The tumour when removed weighed nearly twenty-eight pounds, it consisted, in great part, of a series of cysts; the portion lodged in the pelvis, though cellular, was considerably more solid, containing in parts an oily substance resembling butter, mixed with locks of white hair. Mr. Dickens comments upon the superiority of the large incision, and the impracticability of re-

* Edinburgh Medical and Surgical Journal, Oct. 1845.

moving such a mass by any less extent of incision than was practised in this case.*

The contrast of the above detailed cases, as to their structure and the extent of the respective incisions is extremely interesting. There are facts before us which lead to the supposition that rupture of the cyst and discharge of its contents into the peritoneum is a more frequent occurrence than at present believed. It will be remarked how readily this might have happened in Mr. Southam's case; and the cure of the disease by tight bandaging and certain plans of rough manipulation may have happened in this way, for although the occurrence is sometimes fatal, as in the case presented to the Liverpool Society, still that it is sometimes followed by rapid absorption of the fluid and coetaneous increased action of the kidneys, ending in a perfect cure, is an unquestionable fact.

Since writing the above, an article in the 'Revue Générale,' on the rupture of ovarian cysts has come to hand.† Dr. Camus states that in cases which prove rapidly mortal the fluid extravasated into the peritoneum is usually *pus*. That sometimes an encysted dropsy, after two or three ruptures, is converted into an ascites, although the two affections may coexist. Rupture of a portion of a multilocular cyst, and absorption of the fluid, may repeatedly occur. After repeated ruptures the patient may be definitively cured, the cyst being converted into a hard body. The circumstances in such cases which correspond with a favorable result, are: 1. The effused fluid being purely serous. 2. The parietes of the cyst being in a healthy or quiescent state. (86)

18. *Hernia.*—The medical press has numerous cases and observations on this subject during the last half year, and although much of the matter before us is devoid of interest, as containing nothing either new or remarkable; there are other papers, which we propose to condense, to which importance ought to be attached, as tending to confirm generally-admitted principles, or to afford evidence on doubtful points, and otherwise to elucidate this interesting and important subject.

On the diagnosis of hernia.—The circumstance that several surgeons came to the conclusion that a tumour was not a strangulated hernia, in consequence of the absence of all impulse on the patient coughing, has elicited the remark from Mr. C. Hawkins and Mr. Arnott,‡ that an error of diagnosis is occasionally fallen into on this point, and that, in nine cases out of ten, this symptom is absent after strangulation. On the subject of diagnosis also, M. Bérard§ gives the impossibility of introducing more than a few ounces of fluid into the rectum, as a sign of the sigmoid flexure of the colon being the strangulated part.

Professor Stoltz, of Strasburg,‖ describes a case of vagino-labial hernia with remarks upon the distinction between it and perineal hernia in the female. The broad ligament of the uterus divides the pelvic cavity into an anterior and a posterior part. If an intestinal loop descends before this ligament on the side of the vagina, pushing forward or separating the fibres of the levator ani, it will form a hernia in the labium and nowhere else. If, on the contrary, an intestinal loop descends behind the large ligament, and glides between the vagina and the rectum, it will rise on the side of the perineum near the margin of the anus, constituting a perineal hernia.

* Provincial Med. and Surg. Journ. Oct. 1, 1845.
† Oct. 1845, p. 229.
‡ Dublin Med. Press.
§ Gaz. des Hôpitaux, June 10, 1845.
‖ Gaz. Méd. de Strasbourg.

In a thesis on Strangulation in Hernia, Mr. Gosselin* states that it may occur: 1. By the natural fibrous rings. 2. By accidental fibrous rings. 3. By the neck of the sac. In umbilical hernia, strangulation by the neck of the sac is extremely rare. It is now well established that in crural hernia the strangulation is produced below by an accidental fibrous ring proceeding from the cribriform fascia and superficially by one of the orifices of the *infundibulum*. Strangulation by the neck of the sac is not very common. Strangulation by the crural ring, although generally admitted, has never been demonstrated; M. Malgaigne and M. Gosselin agree that it is next to impossible.

In inguinal hernia, strangulation by the external inguinal ring is not common; by the internal or abdominal orifice is more frequent, by the neck of the sac most common. That strangulation may be produced by the neck of the sac, it is necessary that the hernia shall have existed some time, or at all events that the portion of peritoneum forming the sac, shall have descended for a certain time. Strangulation may be produced by the ring alone when it occurs at the time of the first appearance of the hernia, the neck of the sac being then extensible and ill calculated to produce constriction.

Mr. Gosselin believes that inflammation is more frequently the cause than the consequence of stricture.

It is wrong to imagine that the constipation and vomiting presuppose the obliteration of the caliber of the intestine, the obstacle to the passage of fæces has doubtless much to do with it, but peritonitis has also considerable influence. M. Gosselin does not admit spasmodic strangulation.

Among the more rare anatomical lesions with which strangulated hernia may be complicated, are the following: 1. Cysts formed in the external cellular tissue. 2. Masses of fat contained in a pouch, and simulating omentum in an hernial sac. 3. An empty sac adhering closely to the hernial parietes, or a sac distended with serum, which may be so abundant as to constitute an hydrocele of the hernial sac. 4. Ulceration and perforation of the sac, the intestine at the same time being constricted by it. 5. The condition of a strongly-constricted intestine, the parietes of which are thickened, blackish, infiltrated with serum mixed with blood, sometimes with black blood, which, interposed between the membranes, causes them to separate from each other. 6. The alterations which occur at the point of constriction, in the partial or total destruction by ulceration of the intestinal tunics; this ulceration more frequently attacking the internal and middle coat, and less frequently the peritoneal coat. 7. The shrinking of the intestine proceeding from the strangulated portion; this has proceeded even to obliteration.

The persistence of constipation and vomiting where a portion of intestine is pinched up, or the appendix vermiformis or omentum strangulated, can only be referred to peritonitis or to nervous excitement.

Perforation of the intestine may take place on a level with the stricture, or in the body of the hernia; in the last case which is not the most frequent, it may be the result of partial gangrene, of an effusion of blood, of a small abscess in the intestinal parietes, or an ulceration produced externally or internally by a foreign body.

M. Gosselin gives the diagnostic signs between strangulation and simple inflammation in the hernia. The latter in an old hernia having been allowed to communicate with the peritoneum, may be recognized by the local pain,

* Annales de la Chirurgie, Juin 1845. Revue Méd. Juin 1845.

swelling, and the slight degree of intensity of the abdominal symptoms. But a simple inflammation in a hernial sac without strangulation, which M. Malgaigne believes to be a frequent occurrence, and too often confounded with strangulation, M. Gosselin, leaning to Boyer's opinion, believes to be a rare case, although it may occasionally occur.

Among the ordinary methods of promoting reduction, M. Gosselin prefers leeching to bleeding. He recommends strongly the introduction into the anus of a gum-elastic tube, to discharge the gas contained in the intestines, and states that reduction has been effected by this means in cases where the operation appeared to be imperatively called for.

Treatment of hernia.—A memoir was addressed to the Royal Academy of Medicine, by M. Moreau-Boutard,* on the taxis combined with continued irrigation and the cold douche, for the reduction of strangulated hernia. Three successful cases are described after the taxis alone, and with the warm bath, had failed. The patient is placed naked on an inclined plane, and a continued stream of cold water made to play upon the hernia. The cold acts not only on the muscular fibres, and consequently as a dilator of the natural or artificial aponeurotic or muscular openings, and on the hernial tumour itself, diminishing its volume by its effect on the capillaries, and exciting the peristaltic motions of the intestinal folds, the gases contained in which are condensed,—but it also occasions a powerful contraction of the cremaster and dartos muscles; and this contraction brought into play, may be perhaps the most methodical mode of applying the taxis. The cold water produces general chills, with contraction of the abdominal muscles, and in from five to fifteen minutes, in the above cases, the hernia escaped from the hands of the operator.

Mr. Phillips records a case of strangulated inguinal hernia, illustrating the necessity for acting upon the *history*, even when the signs are not well marked. All that was apparent was some fulness of the inguinal canal, but there were symptoms of strangulation to justify operation. The finger could be easily passed into the inguinal canal, and when the patient coughed, a most distinct impulse was communicated, which, as shown under the head "diagnosis," militated against the fulness being constituted by a strangulated hernia; still on cutting through the aponeurosis of the external abdominal muscle, a large tumour of the size of a hen's egg, immediately presented to view. The sac was very loose, as it was shrivelled up in folds around the gut, and it could be extended as much as half an inch downwards, showing that the intestine had been lower, and that when it retreated, the sac did not follow, nor had it become obliterated.†

Prognosis.—Professor Colles‡ remarks that he has never seen a case of *inguinal* hernia recover, when gangrene had taken place, yet it is very remarkable, that patients with mortified strangulated *femoral* hernia will often recover, although the parts which constrict the intestines are much more rigid and unyielding, have sharper edges, and form a smaller aperture in the latter than in the former.

Reduction without opening the sac. Attempts at subcutaneous incision. Radical cure by the formation of a natural pad.—Dr. Warren, Professor of Anatomy and Operative Surgery of Boston, U. S., has published a series of cases, with remarks, principally intended to enforce the necessity of an early resort to the operation, his usual practice being to

* Journal de Chirurgie, June 1845.

† Med. Gaz. Aug. 1, 1845, p. 500.

‡ Med. Gaz. Sept. 5, 1845.

wait only about twenty-four hours. The cases embrace some interesting points. In an inguinal hernia, the tendon of the external oblique muscle having been exposed, and a small puncture made in the fascia below the ring, the point of a director was passed into this passage, the ring dilated without opening the sac, and the contents of the tumour returned. In a strangulated crural hernia the posterior and inferior edge of the oblique muscle was divided, and the operator remarks, that the stricture was relieved in this way instead of dividing Gimbernaut's ligament, because it was at once perceived distinctly at the anterior part of the neck of the sac. In one case an attempt was made to relieve the stricture by a "subcutaneous operation:" —A director being passed through a small incision in the skin a little below the abdominal ring, an effort was made to insinuate it from below upwards through the fascia into the ring; but as it was perceived in the use of the knife afterwards, that assistance could neither be derived from the touch nor the sight, the plan was relinquished in favour of the ordinary method, the stricture being dilated by a small incision, and the hernia reduced without opening the sac. Dr. Warren states that subcutaneous section has been successfully performed, and an attempt was made by himself in another case, but relinquished in consequence of the extreme sensibility of the parts. He considers that the risk of puncturing the hernial contents, and of returning a gangrenous intestine would counterbalance any advantages that might be derived from this method. In a case of inguinal hernia, wishing to do something to prevent the return of the intestine, an inch of integument on each side of the wound directly over the crural arch was included in the suture, instead of sewing the edges of the skin together. The object was to "shorten" the skin at that point two inches, and to gather it up over the abdominal ring; two such sutures being required at a distance of a little more than an inch from each other, forming a natural pad, which, by compression, might be made to adhere to the aperture of the ring, and be sufficient to prevent the subsequent descent of the hernia. When the patient left the hospital he had neither truss nor bandage, nor was there any appearance of the protrusion of the intestine. In another case, which shall be the last quoted from this paper, a man died without operation four days after the strangulation of a scrotal hernia; on dissection, the mouth of the sac at the inner ring was found to be between one and two inches in diameter, the finger could be readily introduced by the side of the intestine, and there was no stricture whatever at the mouth of the sac; the actual seat of the constriction was the tendon of the external oblique muscle at the abdominal ring, and this hernia might probably have been reduced without cutting into the hernial sac. According to Dr. Warren's experience, in most cases of inguinal hernia the strangulation was at the external abdominal ring, and the plan of dividing the stricture here without interfering with the hernial sac is frequently available. He ridicules the proposal to remove the stricture by dilatation without cutting. His paper is intended to impress upon surgeons the advantages of an early resort to the operation, a principle more frequently acknowledged than acted up to, and he affirms that in his own practice it is a rare occurrence to lose a patient if called in the first period of attack. The force of this last statement will be admitted on reference to a table published not long since by Mr. Inman, of Liverpool, showing the mortality attending the operation in various hospitals and under different surgeons of the first eminence. Out of 545 cases 260 died, or nearly 50 per cent.*

* Report of the Liverpool Pathological Society.

Of 34 cases operated upon in St. George's Hospital in 1842-43, 9 died, the maximum period of strangulation being 7 days, the minimum 3 hours, and the usual practice being to operate early.*

Dr. Warren, it appears, is favorable to the practice of reducing herniæ without opening the sac, but a portion of intestine may be strangulated by the omentum forming a complete bag or sac, including a portion of the intestine, in which case the latter might be returned into the abdomen still strangulated, and a fatal issue would be the result. It appears that of the 34 cases operated upon in St. George's Hospital in 1842-43, although an attempt was sometimes made to reduce the hernia without opening the sac, this always proved unsuccessful.† The same point is illustrated in the following case:

Mr. Long was requested, on the 10th of May, to see a male child six weeks old. He found a scrotal hernia on the right side, the size of a hen's egg, with symptoms of strangulation. The bulk of the tumour, after a little trouble, was reduced, but a portion, the thickness of the little finger, occupying the inguinal canal, and having the testicle at the bottom, remained; this was exceedingly tender to the touch, and could not be returned by any justifiable effort. The warm bath, cold applications, enemata, and the forced injection of warm water through a long tube, failed to procure either a motion or the evacuation of flatus, or the return of the intestine. On the following day tympanitis and tenderness of the abdomen commenced, and the operation was performed in the usual way.

Mr. Long intended, after dividing the stricture, to return the intestine without opening the sac, but found it impossible. The sac contained a knuckle of intestine of a light port-wine colour, in contact with and adherent to the testicle, by a band of coagulable lymph, which was easily torn through. The stricture being divided, the crying of the child forced down several folds of intestine, the colour of which strongly contrasted with that of the strangulated portion, and the indented line of demarcation caused by the stricture, formed a distinct boundary between the two. The most difficult part of the operation was to reduce the intestine, the forcing efforts and crying of the child being insurmountable until the occurrence of fainting. Two motions followed during the night, the first exceedingly fetid; on the evening of the 13th the sutures were removed, and on the 17th the child was quite well.

Strangulation of the cæcum. Perforation. Cure.—The number of the American journal above quoted contains an account of a case of femoral hernia, operated upon by Dr. Hall,‡ by the usual method, on the twelfth day. The patient, a female aged 50, was very feeble; countenance extremely anxious; pulse 130; hiccup; stercoraceous vomiting at intervals; bowels tympanitic; nothing had passed the bowels for fourteen days. On opening the sac the peritoneum was found much thickened, and adherent to the cellular membrane; the intestine chocolate-coloured and adhering firmly to the neck of the sac, and so tender that in endeavouring to insinuate a probe through the stricture, it passed into the intestine; the latter was opened, the stricture divided, and gas and fecal matter escaped; on the inner side, and beneath the intestine, the appendix vermiformis was observed, indicating "pretty conclusively that the strangulated portion must be the cæcum." The patient rallied soon after the operation, had a discharge by the rectum in about a week, and in another week the natural course of the

* Lib. cit. † Hewett on Strangulated Hernia, Medico-Chirurgical Transactions, 1845, p. 222. ‡ Lib. cit. p. 106.

bowels was fully established, the discharges by the artificial opening having ceased. In the treatment of the case before the operation, large and repeated doses of opium were administered, and Dr. Hall thinks but for that drug the patient could not have survived till the twelfth day.

Strangulated hernia complicated with lumbrici.—The same volume contains two interesting cases of strangulated hernia by Dr. Shipman.* In a boy, aged 8 years, with a strangulated congenital rupture, the operation having been commenced, by the time the sac was opened he became perfectly outrageous, but was pacified. About an ounce of liquid was found in the sac, and about four inches of small intestines, highly injected, of a dark purple colour, containing fæces and gas. The caput coli escaped with the transverse arch of the colon so rapidly as to take the operator by surprise, and this, on examination, was ascertained to be full of lumbrici, which could be distinctly felt through its coats.

Hernia complicated with encysted hydrocele of the cord. Cure.—A man, 61 years of age, affected with irreducible inguinal hernia on the 20th of April 1844, was operated upon on the 30th. On a previous close inspection there seemed to be a slight division in the tumour, as if the sac contained two distinct bodies; but the whole tumour was so tense and tender as to make the diagnosis obscure. The sack was very much thickened, containing nearly a gill of fluid, with omentum, and a small piece of intestine, which latter had formed adhesions to the sac and to the omentum. These were separated, and the intestine, being somewhat dark, returned into the abdomen. The omentum was so much thickened, and so generally adherent, that it was thought best not to separate it. Immediately beneath the inner constriction there was still a large tense tumour, of an oblong oval shape, and the size of a goose-egg, the upper boundary being nearly on a level with the external opening of the inguinal canal, and extending half way to the bottom of the scrotum. This was an encysted hydrocele of the cord, and perhaps half a pint of a light straw-coloured fluid, mixed with shreds resembling coagulable lymph, escaped on puncture. All the front of the thickened sac was excised with a view to a radical cure; the patient did well, and six months afterwards there had been no descent of the intestine; the hydrocele was permanently cured, and there was only a very small tumour of the adherent omentum. This writer states that a woman, under his own observation, lived twenty-one days after strangulation; but he urges very strongly the advantages of an early recourse to the operation. A case has been cited of a curious form of internal strangulation, produced by the ileum encircling the sigmoid flexure of the colon in such a manner as to produce the first tie of a knot.†

Double hernia on the same side, strangulation at the neck of the original sac.—In a case operated upon by Mr. James Spence,‡ after opening the sac in the usual manner, dividing some resisting fibres at the ring, and reducing some convolutions of the gut, the intestine seemed to be firmly fixed below, and on opening the sac a little further downwards, a rounded fleshy-looking mass was exposed, evidently adherent to the scrotum by its outer surface. It had a singular appearance, resembling somewhat a portion of large intestine, twisted round the lower part of the loop of the small intestines. Its circumference strangulated the bowel, and so tight was the constriction that a probe-pointed bistoury could not be introduced between its edge and the intestine; and it was resolved, on account of the manifest strangulation

* P. 109. † Report of the Liverpool Pathological Society.
‡ Monthly Journal of Medical Science, Aug. 1845.

of intestine produced, to notch its edge slightly; this was obliged to be done from without inwards. On thus relieving the stricture the substance surrounding the intestine proved to be a small subdivision of the lower part of the sac, greatly thickened, altered in structure and appearance, separated from the upper portion by a firm narrow neck, and closely adherent to the scrotum below. The bowel was reduced, but the patient died, apparently from great neglect on the part of his nurses.

Mr. Spence remarks that the case differs from those described by authors where the stricture has occurred in the body of the sac, inasmuch as the latter were all cases of congenital herniæ. This difference is important, because the lower part of the sac would have the same appearance as the upper, and thus the continuity of the two would be easily recognized. But in the case described, a great alteration in structure had occurred below the stricture, attributable to the patient having worn a truss many years, which by its continued pressure had caused constriction of the neck of the small sac, where it lay opposite the external ring, and had condensed and altered the structure of its surface generally. After a time the use of the truss being discontinued, a larger hernial protrusion took place, not entering into the original sac, owing to the narrowness of its opening. On this particular occasion the bowel passed into the contracted neck of what was the sac of the original hernia.

The principal feature to assist our diagnosis in similar cases is, that although the case presented the appearance of a large scrotal hernia, yet a small "hard lump" could be felt in its lower part, distinct from the rest, and all the contents of the hernia could be returned, except this lump, which the patient stated he had never felt before.

Inguinal hernia; double stricture.—In a second case, which was coincident with an atrophied testicle, a constriction was found about the middle of the inguinal canal, and a very tight, firm stricture higher up, apparently in the neck of the sac. Both were divided, and the case did well. Several other cases are related, each possessed of some peculiar feature of interest. In two instances bronchitis followed the operation.

Rupture of the intestine. Cure.—In a case of inguinal hernia, reported by C. A. Dalby,* Esq., Ashby-de-la-Zouch, about the third day after the operation, sickness, with vomiting, supervened, and fecal matter was frequently rejected by the mouth. On the eighth day a rupture of the intestine at the seat of the operation took place, and the alvine contents were passed through the orifice, on which the vomiting and all other unfavorable symptoms ceased. This continued between three and four months, when a natural evacuation took place from the rectum, without the aid of medicine. For six weeks she had motions daily, sometimes from the anus, sometimes from the wound. About a fortnight after this the external wound closed, and in six months the patient recovered.

Strangulated hernia of the right ovary.—M. Neboux has recorded a case† of this accident. It constituted an ovoid tumour in the inguinal region, of the size of the thumb, which could be partially but not entirely reduced. The moment the taxis was withdrawn it reassumed its original volume; symptoms of srangulation resisted all the ordinary means, and the operation was resorted to. On opening the sac, which was very thick, fluid escaped, and on extending the opening, the ovary, of a dark red colour, verging towards violet, presented in the internal ring. After dividing the stricture and breaking up an adhesion with the nail, reduction was easily effected, and the patient recovered.

* Lancet, Aug. 16, 1845. † Gaz. Méd. de Paris, Aug. 9, 1845.

The above facts and observations are sufficiently conclusive that the subject of hernia, as treated in our standard works, is by no means complete; and it affords us pleasure to observe a new work announced by Mr. Teale, of the Leeds Infirmary, which we hope to have the advantage of for our next Report.

§ IV.—*Surgery of the Genito-urinary System.*

19. *Lithotomy.*—The following is a case of lithotomy in the female without dividing the meatus and anterior portion of the urethra, by Dr. Baker, of the State of New York :*

The patient, aged 49, was placed on the table, and secured in the usual way. A straight grooved staff was introduced through the urethra, and the stone felt with the beak of the instrument. The incision was now commenced by dividing the urethra half an inch posterior to the meatus urinarius with a sharp-pointed bistoury guided by the groove of the staff. The beak or probe-point of the lithotomy knife was introduced through the opening thus made in the urethra into the groove of the staff and pushed forward along the groove, in a direction obliquely outward and downward, until it penetrated the bladder, and the incision continued until of a sufficient size to admit the forceps. The knife was now withdrawn, and the forceps introduced. A stone about the size of a nutmeg was grasped and withdrawn. The search was resumed, and another stone secured and removed, and so on to the number of ten, varying very little in size. No more stones being found, the bladder was carefully washed out with warm milk and water and the patient put to bed. She bore the operation well and expressed herself as being freer from pain than she had been for six months. She could now lie on her back or any other position that was proper. The walls of the neck of the bladder were very much thickened, the result probably of the long-continued irritation from the friction of the stones.

The after-treatment consisted in mild diet, gentle laxatives, diluents, and fomentations, and at the end of two days of the introduction of the catheter, which was suffered to remain for two weeks, with the exception of its being occasionally removed for the purpose of cleansing. At the expiration of this time the wound was found to be nearly healed, and the catheter was permanently removed. After the removal of the instrument she was able to retain her urine for two hours or more, and exercise full control over its evacuation. She continued to progress in the most favorable manner so far as the urinary difficulty was concerned. Her digestion, however, continued weak, her nervous system became irritable, her nights restless, her mind despondent and foreboding, and at the end of about three months she detected a white sediment in her urine. This increased her alarms and apprehensions of a return of her former difficulty. She finally voided, with considerable pain, a crystallized white mass of some fifteen grains' weight, and of irregular form. This consisted of the triple phosphate of magnesia and ammonia, whilst the former calculi consisted mainly of lithic acid. Her present sufferings, together with the deposition in her urine, were attributable to weakness of digestion, and general nervous irritability; opiates, tonics, and exercise, and a more nutritious diet, as soon as her stomach would bear it, were ordered. Under which treatment she soon improved, and the deposition in her urine ceased.

During the presence of a deposit in her urine, she was annoyed with more frequent calls to micturate, yet even then she had full control over

* Phil. Med. Examiner, July 1845.

the evacuation to retain it and pass it at will. From this time her general health steadily improved, and she was able to retain her urine the ordinary length of time, not being at all troubled with incontinence.

The satisfactory result of this case is attributed to the mode of performing the operation, namely, to leaving the meatus and anterior portion of the urethra undivided. Where dilatation of the urethra is practicable, it should undoubtedly be chosen as the simpler method, but even in *this*, incontinence of urine is a frequent consequence. Unfortunately, however, in the majority of cases, especially those of long standing, as in the present, there is so much irritability of the parts as entirely to preclude the success of this operation. The common operation of lithotomy in the female, namely, that of dividing the urethra its entire length is almost invariably followed by incontinence. Such at least appears to have been the experience of Sir Astley Cooper, both in his own operations and those he witnessed in others. He holds the following language in relation to this operation: "In all the cases of this operation that I have performed or witnessed, the urine has not afterwards been retained, but I would not deny that a patient might recover the retentive power. As the loss of retention is the greatest evil, producing excoriation and a very offensive state, I shall in any future operation of lithotomy, try what may be effected by employing a suture to bring the divided parts together."

The advantage of leaving the commencement of the urethra uncut, will be apparent to every one; it at least acts the part of Sir A. Cooper's proposed suture, without the risk of its irritating or being torn out, not to speak of the pain and difficulty of application. The only precaution necessary to secure success, in addition to the common position and care, is the continued use of the catheter, to prevent the urine from flowing through the wound. The two extremities of the wound being secured by natural structure, and the wound being kept free from urine by the use of the catheter, there is nothing to prevent its rapidly and permanently healing as in other parts.

Professor Syme* has also operated by dilatation, and then dividing the ring at the neck of the bladder outwards and downwards to a very small extent, when the textures yielded so as to allow a stone the size of a chesnut to be extracted with the forceps without violence. The patient regained the power of retention in eight days.

M. Segalas† succeeded in breaking up a calculus in a very unfavorable case, where a portion was imbedded in a pouch of the bladder, by breaking off a portion of one of the branches of the *brise-pierre* at its extremity. Professor Malago extracted, from a man aged 18 years, a calculus weighing four ounces, in which metallic mercury was detected by several competent chemists; from an early age the man had been subjected to mercurial frictions for the discussion of a lymphatic tumour.‡ Two cases of operation, with clinical remarks, by Mr. Aston Key,§ well illustrate the usual cause of difficulty in seizing the calculus.

20. *Rupture of the bladder.*—A very interesting case is recorded in the 'Medical Gazette,' by Mr. Wells, Assistant Surgeon to the Royal Military Hospital, Malta, of rupture of the bladder external to the peritoneal cavity. The patient survived the accident a little more than five days. On post-mortem examination, the peritoneum was found pushed upwards, having left a large cavity filled with urine and coagulated blood; at the bottom

* Monthly Journal of Med. Science, Oct. 1845.
† Archives Générales, Aug. 1845.
‡ Filiatre Sebezio, June 1845.
§ Med. Gaz. Aug. 18.

of which was the bladder, quite contracted, with a rent on its anterior surface, about an inch and a half long, the edges of which were hard and rounded. The whole of the cellular tissue surrounding the bladder, the muscles around the pelvic cavity, and the superficial abdominal muscles, were all softened, gangrenous, and permeated by a urinous fluid. The peritoneum was intensely inflamed, very little serum effused, but the intestines adherent by recent lymph. Mr. Wells remarks, that sixty-four hours elapsed from the period of the accident until severe peritoneal complication ensued; and that the uninjured state of the peritoneum renders it extremely probable, that if, in such an accident, a free exit were afforded to the urine extravasated into the pelvic cellular tissue, a favorable termination might ensue.

21. *Suture of the perineum.*—M. Roux operates in the following manner: The patient being placed as for lithotomy, the edges of the lips of the laceration are excised, and also the margin of the recto-vaginal partition, the sutures (three in number) are then passed from right to left, the most inferior one first, and the threads are introduced so as to embrace as much as possible of the neighbouring healthy structures. The extremities of the threads are then firmly fixed on one side and tied on the other upon the bougies or quills, so as to keep the lips of the wound in close apposition. A catheter is placed in the bladder to prevent the contact of urine with the wound, and to avoid the necessity of introducing the instrument after swelling of the organs has taken place. On the eighth day the ligatures are removed, and not before one motion, at least, has been brought on by the exhibition of castor oil. Professor Roux has operated sixteen times; twelve patients have been perfectly cured, three have died, and one experienced no benefit. Several of the twelve first have since given birth to children, and the cicatrices have never given way. The professor attributes the almost constant ill success, hitherto, of this operation to the employment of the *twisted* suture.*

22. *Vesico-vaginal fistula.*—J. L. Petit shrunk before the difficulties of any attempt to cure this disease when there is considerable loss of substance; but since the publication of a memoir by Lallemand, in 1825, the first surgeons in France have made efforts to do so. Among these may be cited Desault, Dupuytren, Mallagodi, Roux, Velpeau, and Vidal, but with very little success. Many have denied that a cure has ever been obtained; nevertheless M. Jobert is said to have performed seven operations of an autoplastic nature, to which he has applied the term *elytoplasty*, with more or less success. We have given a very interesting case of this disease, (Abstract, art. 67,) in which the last-mentioned surgeon, having failed by his usual method, adopted a new one with complete success.

In a report by M. Vidal,† of a discussion at the Royal College of Medicine, we obtain the particulars of a case operated upon by M. Bérard, by the method of infibulation or obliteration of the vagina. The principle of this method is to abandon the perforation in the bladder, and to unite the vulva, so as to obliterate the vagina, and to form with its posterior parietes a new fundus to the bladder. The case was an enormous fistula, in which not only the vesico-vaginal partition, but the posterior part of the urethra, was destroyed. M. Bérard made an elliptical incision round the vagina, behind the nymphæ, from the meatus above to the commissure below. The posterior edge of the incision was taken up with forceps, and the mucous membrane dissected off, two centimetres above and three below. It

* Med. Times, Oct. 18, 1845. † Annales de la Chirurgie, May 1845.

then formed a diaphragm, adherent by its large circumference, and pierced with an oval opening, presenting an external bleeding surface, and an epithelial surface towards the vagina. A suture (a point passés) was passed round the small circumference, the two ends of the thread being left pendant in the vulva. Then a catheter, (sonde de Belloc,) introduced by the urethra, was passed through the fistula, and brought out by the small circumference. The two ends of the ligature were fixed upon this, and drawn back by it through the urethra. The catheter was then replaced by an elastic gum bougie, intended to facilitate the flow of urine, and to give attachment to the thread. This was fixed firmly. On drawing the threads the circumference of the diaphragm was drawn, like the mouth of a purse, backwards, presenting the aspect of a hollow cone, which could be tightened so as to close the aperture. The surfaces of the mucous membrane, from which the circular diaphragm was detached, were drawn together and maintained in contact by suture. The obliteration of the vagina was not complete, and the patient died of peritonitis about six weeks after the operation.

Numerous objections to this operation were brought forward. Among the rest, the impossibility of obtaining a complete occlusion of the vagina—the difficulty of the operation—the retention of the menses in early life—the prevention of the performance of the sexual functions—and the danger of peritonitis and purulent absorption. Mr. Bérard remarked, in reply, that a woman with a large and deep vesico-vaginal fistula, the urine flowing without cessation and irritating the vagina and vulva, the buttocks and thighs irritated, the patient exhaling an insupportable odour, the sexual relations prevented, the disgust inspired, her sufferings casting her into despair, urging her to suicide, or leading to inevitable death—the case incurable by all known means,—under these circumstances he retains his favorable opinion of the operation for the obliteration of the vagina. In the case in question, the patient was doing well to the twenty-third day, when an inflammatory attack occurred from cold, and she died seventeen days afterwards. On dissection, the vulva was found nearly obliterated, two small openings only existed superiorly and inferiorly, the latter communicating with the vagina and the former with the bladder.

M. Ségalas has also published a case of urethroplastic operation,* in which a reparation of a breach of substance in the urethra was effected, the operation having hitherto failed, in consequence of the contact of the urine with the parts not having been prevented. There was a breach of substance an inch in length, which had existed from childhood.

A recent case of laceration of the bladder, about an inch from the neck, so as to form a vesico-vaginal fistula, cured by healthy granulation, after the application of lunar caustic to the edges of the laceration, keeping a sponge tent in the vagina, a catheter in the bladder, and directing the patient to lie as much as possible on the face, is recorded by G. Reed, Esq., of the Hertford Infirmary.†

23. *Fungus testis.*—In our First Volume, (art. 81,) Professor Symes's new plan of treating certain cases of fungous testicle by pressure is described and its rationale, according to the professor's views, given. Dr. James Duncan has related a case treated in this manner.‡ The result of the cases already published, he remarks, removed some of the objections which naturally suggested themselves; but the question whether the gland would regain its functions remained, and could not be satisfactorily determined, unless the

* Mémoires de l'Acad. Royale de Méd. vol. xl. 1845. † Lancet, Oct. 11.

‡ Northern Journal of Medicine, June 1845.

patient affected with the disease had been deprived of the other organ. In the case described, one testicle had been diseased at a former period, and no trace of it remained; the disease was well marked in the remaining testicle, and of four months' standing; an elliptical incision was made around the fungus, and extended upwards and downwards; the integuments were raised and brought over the growth, and retained by several stitches. Partial union only, by the first intention, took place; but there was no disposition in the fungus again to protrude, and in less than six weeks the wound was completely cicatrized. According to the man's account, his sexual desires were as strong afterwards as they were two years previous to the existence of the disease in either testiele; and in a communication had with him subsequently, there was reason to believe these powers had been tested.

We have seen extirpation of the testis give way to ligature, and ligature again to the "elliptical incision;" but it is unquestionable that cases of this disease, for which formerly the knife would have been employed, now get well by a milder treatment. A case of very large fungus testis, which had run riot for four months, presenting an appearance approaching malignity, with a very fetid discharge, lately presented itself to us. The patient was put under blue pill night and morning, and hydriodate of potash twice a day, and black wash and red precipitate were applied locally. An impression was made in a week, the surface of the large projecting tumour assuming a convoluted form, and in six weeks the disease was nearly cured.

§ V.—*Diseases of the Joints.*

24. M. A. Bonnet, of Lyons, has published a voluminous treatise on the subject of diseases of the joints, which has been very favorably received by a part of the French press,* but much less so by another part.† It is represented as being the result of five years' assiduous labour, under the most favorable circumstances. The work is limited to organic affections of the joints; and the effects of hygienic and constitutional causes in producing these affections is more completely entered into than in any other work extant. To counteract the effects of such causes great reliance is placed on those general agents which render the individual better able to resist cold, as the employment of baths and hydrotherapeutic measures, for the purpose of re-establishing the functions of the skin, and determining the blood permanently to the external parts. The effects of diathesis are most completely investigated. New views are introduced, arising out of an examination of the anatomy of texture. Fungosities developed in the joints are shown to be formed of fibrine and serosity, and to contain small capillary vessels; plastic lymph, known to pass through successive stages of development—at first inorganic, and composed of fibrine and serum—is soon penetrated with capillary vessels, and then, in a third stage, it becomes cellular, fibrous, or cartilaginous,—in a word, organized. The fungosities referred to are plastic lymph arrived at its second stage. Sometimes local, but more frequently general morbid causes prevent the progress of nature to the further stage, or that of healthy granulation. These fungosities are truly an arrest of development—they are plastic lymph, the organization of which is arrested by an internal cause. In the articulations, as in the serous membranes, the formation of fibrous tissue is the last act of the *nisus formativus*, and whenever we find a fibrous layer on the articular surface of bones deprived of their cartilages, or this tissue constituting membranes, or extending in fasculi from one articular surface to the other, we may be sure that nature

* Gaz. Méd. Juin 1845. † Archives Générales, Juillet 1845.

has made a curative effort to complete the evolution of coagulable lymph. —Following the same train of investigation, there are three distinct orders of deposit which form in the joints. In the rheumatic diathesis, the least serious, there is a tendency to secrete organizable products—as effusion of coagulable lymph. In the scrofulous diathesis—that in which fungosities most frequently occur—there is a marked disposition to secrete products which organize incompletely. In the most unfavorable states of constitution, the tubercular, the purulent, the gouty diathesis, the deposits—pus, tubercle, uric acid—are absolutely unorganizable. The author distinguishes several varieties of the scrofulous diathesis.

Placing great reliance upon absolute rest and position in the treatment of diseased joints, M. Bonnet has determined, by repeated clinical observation and experiment on the dead body, for each articulation, what attitude is injurious and what advantageous; he appropriates for each joint those mechanical means which are best calculated to fix it in position, and to facilitate its cure; and his own practice has done much to popularize the employment of his apparatus. Subsequently he resorts to "passive motion," and gives rules for its judicious employment.

Dr. A. Guepratte has also published a long article on *wounds of the articulations*. It recapitulates the general principles of modern surgery in the diagnosis, prognosis, etiology, and treatment of such injuries.*

§ VI.—*Dislocations.*

25. A case of *dislocation of the tibia* forwards is described in the First Volume of the 'Half-yearly Abstract,' (article 92.) In the present Volume, (article 57,) will be found a second case; and Mr. Hamilton has recently recorded a similar accident.† Mr. Samuel Cooper states that a dislocation of this bone forwards cannot happen without the greatest difficulty, citing as a rare occurrence, that in 1802, a case was seen in Guy's Hospital. Whether this accident occurs more frequently than is commonly believed, or whether the occurrence of three cases within so short a period, is but a remarkable coincidence, the cause in all three was in principle the same; the propulsion of the femur forwards with the weight of the body forcing its condyloid extremity downwards and backwards, while the leg was either fixed, or if in motion, the power acting at the moment when the leg and thigh assumed a right line, the body still being propelled forwards. The symptoms and appearances were similar, and they were all easily reduced. These cases will assist systematic writers in describing the accident.

M. Jacquet‡ is reported as holding that the effect is produced by a lever of the first order, the patella being the fulcrum, the ligaments, the resistance, and the lower end of the femur, the power. We have stated our dissent from this view, but are inclined to believe with Velpeau, that the leg may be bent forwards to a very considerable extent without the ligaments being ruptured; although sometimes these will give way, when the weight of the body would slip the femur behind the tibia.

26. *A dislocation of the forearm backwards*, produced by a singular cause, is related by Dr. Weber.§ In a trial of strength, a young man supported his arm in a state of extension, at a distance from his body. His competitor was to bend the limb, which he failed to do by the gradual exercise of his muscular power, but he struck a blow in the bend of his elbow

* Annales de la Chirurgie, Juin 1845.
† Dublin Journal, July 1845.
‡ Gaz. des Hôpitaux, May 1.
§ Archiv für Physiologische Heilkundie.

with his fist, the result of which was a luxation of the forearm backwards, which M. Langenbeek, who saw the case three weeks afterwards, failed to reduce. The editor of the 'Journal de Chirurgie'* is severe on the ineffectual efforts at reduction, and remarks that we are in possession of means of traction which ensure better results, quoting cases of incomplete luxation backwards, reduced after the expiration of nearly four months, and a complete luxation reduced on the thirty-seventh day.

27. The reviewer of M. Bonnet's work on Diseases of the Joints,† remarks that M. Bonnet and M. Malgaigne consider "la maladie que Hey a décrite sous le nom de luxation des cartilages semi-lunaires," as an incomplete luxation. If the late Mr. Hey of Leeds is referred to, we are not aware that he so designated the affection referred to. After describing the symptoms, the leg being readily bent or extended by the hands of the surgeon, with at most a degree of uneasiness to the patient, but the patient himself being unable freely to bend, or perfectly to extend the limb in walking, and being compelled "to walk with an invariable and small degree of flexion," that distinguished surgeon states his belief that the complaint may be induced "by any such alteration in the state of the joint as will prevent the condyles of the os femoris from moving truly in the hollow formed by the semilunar cartilages, and articular depressions of the tibia. An unequal tension of the lateral or cross ligaments of the joints, or some slight derangement of the semilunar cartilages, may probably be sufficient to bring on the complaint. When the disorder is the effect of contusion, it is most likely that the lateral ligament on one side of the joint may be rendered somewhat more rigid than usual; and hereby prevent that equable motion of the condyles of the os femoris, which is necessary for walking with firmness." These are Mr. Hey's own words, taken from his chapter on "Internal Derangement of the knee joint," the reviewer while he acknowledges the high authority of the two surgeons quoted, expresses his doubt as to the possibility of a displacement of the internal condyle of the femur behind the semilunar cartilage.

28. *Reduction of dislocations.*—Dr. Da Camin‡ has thought it necessary to insist anew upon Pott's principle, too little regarded, he believes by most surgeons; viz., that it is not the bones but the muscles which are the greatest obstacle to reduction. The insertion of the muscles involved, is first to be looked to, and the position given to the luxated member, should be regulated by the sufferings which the extension of the limb occasions. Take for instance, a luxation of the fore-arm; to reduce it easily it is necessary to elevate the arm to the position by which it makes an obtuse angle with the chest, overcoming the contraction of the tendons of the biceps, and of the brachialis internus forcibly applied on the inferior extremity of the humerus.

Dr. Da Camin has readily succeeded in reducing three inveterate luxations of the humerus by a simple movement, which consists in drawing the humerus backwards by its inferior extremity; in this manner, he brings together on the one hand, the points of insertion of the biceps, while on the other hand, he separates those of the antagonist muscles. One of the cases reduced in this manner had subsisted for forty-nine days, another fifty-three, and the third, 106 days.

Mr. L'Estrange, of Dublin, has described, with a woodcut,§ a new apparatus for permanent and steady extension in dislocations, and Dr. Gilbert

* Aug. 1, 1845.
† Archives Générales, Juillet, 1845.
‡ Annali Universali di Medicina, Dec. 1844.
§ Dublin Med. Press, July 23, p. 60.

of Pennsylvania, has recommended a plan first resorted to by Dr. Fahnestock of Pittsburg, of employing, in the absence of pulleys, the power derived from twisted rope, for the purpose of obtaining steady and equable traction. The following is the mode of application:

Place the patient and adjust the extending and counter-extending bands, as if for the pulleys; then procure a rope, such as is used for suspending clothes to dry, or a bed-cord, tie the ends together, and again double it upon itself; then pass it through the extending tapes or towel, doubling the whole once more, and fasten the distal end, consisting of four loops of rope, to a window-sill, door-sill, or staple, so that the ropes are drawn moderately tight; finally, pass a stick through the centre of the doubled rope, dividing the strands equally by it; then, by revolving the stick, the rope being shortened, extension is produced slowly, steadily, and continuously; while the surgeon, with his hand upon the part, directs the head of the bone towards its destination, as in cases where the pulleys are used.

29. *Anchylosis.*—From Dr. Pancoast's 'Operative Surgery,' we learn that Dr. Barton has suggested and performed a new operation for anchylosis of the hip, which it is believed may be found applicable to a similar condition of other joints. It consists in making a crucial incision over the trochanter major seven inches in length, and five broad, dissecting the flaps back, dividing the fascia, detaching the muscular fibres from the upper extremity of the femur, dividing the head across with a saw, and subsequently moving the lower portion from time to time on the upper, for the purpose of preventing solid reunion, and of forming an artificial joint.

§ VII.—*Fractures.*

The French press in particular, of the last six months, contains some very interesting matter on fractures, which however little disposed we may be to admit the validity of all the views embraced, cannot fail to strike the British surgeon, as well deserving his consideration. Certain it is that the principles of treatment in fractures are in many instances still unsettled, and we do not believe that a strict adoption of those which are well ascertained has ever yet been carried out in actual practice.

30. In the first place we have before us some important papers on the oft-discussed subject of *fracture of the neck of the femur.* Mr. Bransby Cooper* follows Sir Astley in firmly maintaining that nature is opposed to the osseous reunion of such an injury, that—1. The low condition of the reparative powers at an advanced period of life.—2. The changes peculiar to the hip-joint from age.—3. The peculiarities of original structure, are inseparable impediments to union. Mr. Cooper explains various alterations in structure, and refers to the absence of those tissues which are connected with the bones, and which perform so important an office in their reparation, particularly in the processes preparatory to ossification, as special obstacles. In the process of reparation of fracture, external to the capsule, the bony union takes place to the very edge of the attachment of the synovial membrane, and no further, a proof that it is ordained by nature that it shall not take place within the capsule. The necks of old femora having lost the irpowers of generating phosphate of lime is another insuperable obstacle.

With these views, Mr. Cooper maintains that no mode of treatment can

* Guy's Hospital Reports, Oct. 1845.

lead to bony union, that every kind of apparatus is alike useless, and that it is highly injurious to patients to attempt it. Views similar to this are for the most part acted upon by British surgeons, yet it is admitted that bony union sometimes takes place, and even Sir A. Cooper had satisfied himself of the fact. On the other side of this great question, we find Chelius,* a high authority among the Germans, asserting that the reason bony union has hitherto in England been seldom observed, may depend on the very careless treatment of fractures known to be within the capsular ligament; and that the condition of the head of the bone has nothing to do with it, but rather the difficulty of keeping the fractured ends for a proper time in sufficient contact. Again, we have before us a recent article by a French surgeon, M. Guerin,† whose views are briefly as follows:—

After remarking that, among the fractures which generally unite by ligamentous tissue is that of the neck of the thigh-bone within the capsule, and that no doubt now exists of the possibility of osseous union in this situation, M. Guerin adopts Bichat's reasoning that the organization of the femur is nearly the same at its neck as in its body, and records experiments to confirm it, and to prove the vitality of the head of the bone after its separation. Injected fluid was easily made to pass from the ileum through the round ligament to the head of the femur. Many reasons also are given to prove that the vitality of the neck of the femur is sufficient for the formation of callus. Instances are quoted in which after non-consolidated fractures the round ligament was found to be extremely vascular, and its vessels greatly dilated. M. Guerin believes that the true cause which prevents osseous union is *the mobility of the fragments.* Neither the inclined plane, Desault's splint, nor any of the methods employed for the cure of these accidents are sufficient to prevent motion; and if in spite of this mobility, union by fibrous tissues still takes place, it shows a powerful tendency to bony union, since the fragments are continually sliding upon each other,—as much so as when the surgeon attempts to form an artificial joint. It is no argument that this displacement of the fragments has no effect upon the union of fractures without the fibrous capsule, which are mostly oblique, since intracapsular fractures are nearly transverse. Contrary to the prevailing opinion the author believes that bony union might generally be obtained, by preventing the motions of the pelvis, to effect which M. Bonnet's apparatus is completely effectual.

This apparatus consists in a solid half-cylinder (gouttière) which contains the two posterior thirds of the fractured limb, and the two posterior thirds of the pelvis and abdomen. Its framework is a bar of iron, solid behind, thinner at its sides which are sufficiently supple to be bent towards or from the axis of the box. This framework is well covered with horsehair; on its sides, above the great trochanter, and on a level with the the knees, are bracelets from which cords proceed which pass through a hook at the head of the bed. The patient, placed in this apparatus, which has a large opening on a level with the anus, can easily raise his whole body horizontally above his bed—he has only to draw the cord for this purpose. In every case the body is moved *as a whole*, the vertebral column has no motion on the pelvis, nor the pelvis on the thigh; accordingly, there is no tendency to displace the fragments. To prevent rotation outwards the extremities of the gouttière rise up on each side of the foot to the top of the great toe. Continued extension is made by means of a weight

* System of Surgery, translated by South, p. 567. † Archives Gén. Juin 1845.

which moves on a pulley fixed to the apparatus. The lateral motions of the trunk are confined by the sides of the apparatus which reach nearly to the armpits.

We place before our readers these diametrically opposed opinions, and can only say that, with the facilities afforded by our hospital appointments, we shall feel surprised if a serious question of fact, such as this is, cannot be definitely settled by the statistics of experience.

31. *Fractures of the clavicle.*—M. Guerin's memoir* embraces not only the treatment of fractures of the neck of the femur, but also of other fractures which are generally very imperfectly united. His principal object is to prove that if these fractures unite only by the medium of fibrous tissues, or by the formation of an irregular and deformed callus, such a result is produced by a radical error in the treatment. Some deformity almost always follows fracture of the clavicle. The author approves of Desault's principle of using the humerus as a lever, with a pad in the armpit as a fulcrum, for the purpose of pushing the scapula backwards, upwards, and outwards, in order to bring the depressed external extremity upon a level with the internal one of the broken bone. But he states that neither Desault nor any of the surgeons before or since his time have dreamt of one important indication, viz. :—"*to prevent the mobility of the internal fragment.*" M. Guerin proves by experiment that on the motion of the arm on the sound side the ends of the broken bone ride over each other, and particularly that when the arm on the sound side is carried backwards the sternal fragment slides from above downwards. And, also, that when a person with a broken clavicle turns his face to the sound side, both arms hanging down, the internal fragment of the bone is carried upward by the contraction of the sterno-mastoideus muscle, and that even when the arm is fixed and bandaged by the ordinary methods a crepitus is produced by these motions. The effect on the internal fragment is greater in proportion as the seat of the fracture approaches the insertion of the above-named muscle. The indications which the surgeon has to fulfil, in order to obtain an exact and regular consolidation are accordingly three. 1. The scapula should be directed upwards, backwards, and outwards, and fixed with an immovable bandage. 2. The arm on the sound side should be fixed to the chest so as to prevent its motion. 3. The action of the sterno-mastoid muscle should be opposed by keeping the face directed towards the fracture by bandages.

M. Guerin does not dispute the inconveniences which must attend the fulfilment of all these indications, particularly if persisted in for a month. He remarks that experience must decide, but that possibly, owing to the great quantity of callus thrown out, the motion of the head may be allowed after a few days, without injury.

The reviewer of this paper in the 'Gazette Médicale,'† admits the correctness of M. Guerin's principles, but thinks they will not be put into practice, since the inconveniences resulting from a badly-united clavicle are not very important. Upon this, however, it may be remarked that the deformity resulting from such an accident is not always regarded so lightly, especially when the subject is a female. The same cause is in operation to prevent the bony union of the patella and olecranon, the superior fragment not being invariably kept in contact with the inferior one by the various means employed.

32. *In fractures of the olecranon*, surgeons have been too much occupied

* Archives Gén. Mai 1845. † Aug. 9.

with one thing only—the position of the arm and forearm. But the indication of diminishing or preventing the influence of the triceps muscle, in drawing the superior fragment upwards, has either been overlooked or imperfectly accomplished. To effect this M. Guerin recommends three wooden splints, corresponding to each portion of the triceps muscle, to be fixed by means of a starched bandage. The indication might be fulfilled by moistened pasteboard, which, being moulded to the surface, would not compress the osseous projections too forcibly. If wooden splints are used, they need not descend so far as the olecranon. The limb should be extended, and the fragments maintained in contact with the usual bandage. This method has not been put into practice, but the author considers it rational. The action of the triceps is the true obstacle to bony union. A case of fracture of the olecranon, in which M. Blandin kept the forearm in a state of flexion, is recorded.* He considers, in this accident, that anchylosis is most to be dreaded, and that if this should be the result, the best position for the limb is semiflexion. He has tried both flexion and extension, and admits there are circumstances in favour of each plan. The opinion that the former has a greater tendency to prevent bony union is without foundation. M. Blandin makes the curious remark, that a certain degree of separation of the two fragments may present itself at the surface, after the termination of the case, and the union may at the same time be immediate and complete below. The bone may be completely united in the deeper parts. This fact was observed after death, in an individual who a short time previously had fractured the olecranon.

33. The imperfection previously described is met with, according to M. Guerin, in the treatment of *fractures of the patella.* In this case, as in that of the olecranon, an X bandage fails to keep the divided fragments in apposition. Boyer placed the leg in a box, to the sides of which straps were fixed, which confined the superior and inferior fragments previously brought into apposition. The box has the advantage of keeping the limb extended, and the straps do not compress the flexor tendons in a troublesome degree, but the triceps maintains its power, and opposes the union of the fragments. By means of a double (érigne) crotchet, M. Malgaigne obtains bony union of the patella, whatever may be the position of the fractured parts of the bone. With the double crotchet he grapples the tendon and the ligament of the knee-pan, and the two parts are brought together by two steel plates, and fixed by a compressing screw. As perfect union is obtained by this means as in the middle of the long bones. Many practitioners have witnessed the favorable results of the practice. If this plan is not adopted, a bandage may be resorted to for the purpose of compressing the extensor muscles of the leg, in the same manner as recommended for the arm,—a starched bandage rolled over splints, extending from the top of the thigh to within a short distance of the patella,—aided by extension of the limb and bringing the fragments together.

34. *Fractures of the superior extremities of the humerus.*—M. Malgaigne† arranges this accident under three heads: 1. Fracture of the neck of the humerus, or those which occupy the surgical neck of the bone, without the capsular ligament. 2. Fracture of the head of the humerus; intracapsular fracture; occupying the anatomical neck of the bone. 3. Fracture of the great tuberosity. But there is nothing new in this arrangement, as appears to be assumed; Sir Astley Cooper distinguished the sur-

* Gaz. des Hôpitaux, July 12, 1845. † Journal de Chirurgie, Sept. 1845.

gical neck of the bone, which distinction has been since adopted at Guy's Hospital and elsewhere.

In more than twenty fractures of the neck, M. Malgaigne has witnessed displacement of the fractured ends in two only, and he believes that there is a mistake in the recorded experience, on this point, of the most eminent surgeons,—Moscati, Ledran, Desault, Botot, Richerand,—displacement being a very rare exception. When displacement occurs, it is not always inwards, but sometimes the lower fragment of the bone projects forwards or backwards, and even outwards. Examples of the whole of these are given.

If displacement even occur to the extent of admitting one fragment to ride over the other, M. Malgaigne asks the question, whether it is true that the weight of the arm is sufficient to prevent any considerable motion? and he quotes J. C. Petit against this doctrine, who remarked, that if a fracture of the humerus is situated about the insertion of the deltoid, the action of this powerful muscle must be sufficient to neutralize the effect of the weight of the arm. An interesting post-mortem examination of an unreduced recent fracture of the humerus is given, in which the two fragments were separated; the riding of the bones took place to the greatest possible extent, shortening the limb about three *centimetres*, and the head was turned in the direction downwards and inwards by the action of the supra-spinalis, and probably other muscles, so as to throw the superior fragment of the bone upwards and outwards, corresponding to the highest possible elevation of the arm, a circumstance M. Malgaigne states hitherto unknown in surgery, explaining the impossibility of reducing the fracture by extension made in the usual direction. It must, however, be a mistake to say that the nature of this displacement was not previously known. We are informed by Mr. Macmurdo, of St. Thomas's, that the late Mr. Tyrrel reduced a fracture of this kind by first raising the arm, and then employing extension, and that by keeping the limb in an elevated position for a sufficient length of time the case did well.

35. *Fractures of the ulna and radius.*—M. A. Bidart,* of Arras, affirms that the semi-prone position, usually adopted in the application of splints, and during the consolidation in this fracture, has an unfavorable tendency. In supination the bodies of the radius and ulna are at the greatest possible distance from each other; their parallelism and the interval which separates them are consequently as complete as can be, and the osseous plane of the anterior and posterior faces of the arm as regular as possible. In semi-pronation, on the contrary, the radius, by the action of the pronators, tends to roll upon the ulna at its inferior extremity; the parallelism is in part destroyed, the forearm is twisted upon itself, and the osseous planes to a considerable extent lose their regularity. In supination a bandage may be applied with greater exactitude, and will more completely maintain the muscles in the interosseous space and the bones in their natural position. It appears also, according to M. Bidart, to be equally true, that if, immediately after reduction, the limb is placed in a semi-prone position, the original position of the bandage on the arm will change, the ends of the bone will be brought into the interosseous space, and an unfavorable union must result, ultimately impeding or preventing the rotation of the arm.

Although thousands of fractures of the arm treated in the semi-prone

* Journal de Chirurgie, July 1845.

position are succeeded by no unfavorable result it must be admitted that after the application of the splints, the limb either assumes a position intermediate between supination and semi-pronation, or the tightness of the bandage must overcome the action of the muscles of the forearm ; in which latter case, the limb would retain its supine state, unless moved as a whole by the muscles of the arm and shoulder.

In answer to the objection that supination is an unnatural position, M. Bidart remarks, that it is not the only case in the treatment of fracture, in which advantage may be obtained by deviating from the natural position. The application of a compressing bandage during semi-pronation is completely illusory ; if we place inflexible splints on the palmar and dorsal faces of the arm, and then bind the limb up tightly, the torsion of the limb disappears, and the inferior part is brought forcibly into a state of supination. The author has for a long time past adopted supination in his practice, both for reduction and during the after treatment, without once having had occasion to regret it ; the forearm being fixed horizontally on the lateral part of the trunk, so as to form a right angle with the arm, the direction of which is vertical, the ends of the sling by which it is supported pressing before and behind the chest, and being tied on the shoulder of the opposite side.

36. *Fractures of the ribs.*—M. Lisfranc* has introduced what is said to be a modification in the treatment of this accident, the importance of which experience confirms. Pressure exercised on an oval body acts with more force in the direction of the longest diameter ; and the transverse is generally greater than the antero-posterior diameter of the thorax. Accordingly, the pressure of a bandage, embracing the whole circumference of the chest, is greatest at the lateral parts, and thus must tend to press the ends of the bone *inwards*, instead of fulfilling the indication of directing them *outwards*. For the latter purpose compresses, about four inches wide, should be placed over the sternum ; so graduated, that the antero-posterior, not only equals but even exceeds the lateral diameter.

This principle of treatment is undoubtedly correct, and we believe it is admitted by Mr. Samuel Cooper and others, at the same time it is very seldom acted upon in this country, and perhaps in consequence of the omission, the bandages have frequently to be removed altogether, to obviate the pain produced in respiration by the fractured extremity of the bone.

§ VIII.—*Amputations.*

37. *Treatment of amputations.*—M. Roulland has published a work on this subject.† The author arrives at a decided opinion against the practice of keeping patients under amputation on a low diet. He shows that in 1815, the mortality was much less among the Russians who adhered to their inflammatory customs, than among the Germans and French, who were treated by the ordinary rules. 1-7th of the Frenchmen died ; 1-11th of the Germans, and only 1 in 26 of the Russians.

The work embraces an investigation of Dr. Guyot's method of incubation, (Abstract, Vol. I, p. 218,) in the treatment of the stump after amputation. This consists in keeping it at a temperature of 36°. Twelve cases are given ; of 5 amputations of the thigh, 4 were cured; of 6 amputations of the leg, 5 were cured ; and 1 humero-cubital amputation was cured. M.

* Gaz. des Hôpitaux, July 8, 1845. † Archives Gén., Août 1845.

Roulland considers that these facts should direct the serious attention of surgeons to M. Guyot's proposal.

38. *Amputation in spreading gangrene.*—In a paper by Mr. Edward Parker, we are reminded that to Larrey the merit is due, of distinguishing the particular cases of this class, to which amputation is applicable.* Mr. Parker gives an instance of a young woman, who sustained a very extensive injury of the arm, with fracture of both bones, in which gangrene occurred, and during its progress, amputation was performed above the elbow, where the parts were healthy. The patient recovered. Also a second case of a man aged 44, who from an injury of the hand with a hawser, was affected with gangrene of the right arm, which extended nearly to the elbow; the inflammation and swelling reaching the axilla. Amputation was performed about four inches below the shoulder-joint. This patient also recovered. The author considers it important to give publicity to the evidence which such cases affords in favour of Larrey's principles.

39. *Amputation at the knee.*—Mr. Syme, professor of clinical surgery in the University of Edinburgh, has introduced the practice of amputating by dividing the femur at the knee-joint.† Mr. Syme states as follows—there are few operations in surgery which have excited so much discussion as amputation of the thigh. The danger immediately attending its performance, and the inconvenience of its imperfect result in rendering the stump uncomfortable, have suggested various modifications of procedure, with the effect certainly of restraining the hemorrhage, diminishing the patient's suffering, and promoting union of the wound. But the evidence of hospital statistics still shows that the average frequency of death is not less than from 50 to 70 per cent. while many of the survivors suffer from uneasiness, connected with the protrusion of the bone. Having devoted much attention to the subject of amputation, seen the circular incision give place to the flap operation, and witnessed the results of these methods variously modified, in the hands of many surgeons possessing every degree of operative skill, Mr. Syme was at length led to the conclusion, that there is something radically wrong in the principle of the operation. The error he believes to be in dividing the thigh-bone through its shaft, instead of at the condyles or trochanters. But before attempting to establish the advantage of operating upon the latter principle, it may be proper to inquire how far the operation so conducted would attain the objects for which its performance is required.

The most frequent occasion for amputation of the thigh, Mr. Syme states, is afforded by diseases of the knee-joint. Next to this may be ranked compound fractures of the leg and thigh; and then, tumours growing from the bones of the leg and thigh. In regard to diseases of the knee-joint, the warrant for amputation lies in the bone, and not in the soft parts, which however much altered through scrofulous degeneration or suppuration, readily admits of restoration to their natural condition, as is clearly shown by what happens after excision of the elbow, or amputation at the ankle-joint. In so far, therefore, as removal of the disease is concerned, amputation through the condyles of the thigh-bone would in this case prove sufficient. As to compound fractures of the leg, if the integument and muscles permit of the limb being removed at the middle, or lower third of the thigh, they cannot present any obstacle to a few inches more of the bone being preserved,

* Month. Journal of Med. Science, Aug. 1845.

† London and Edinburgh Month. Journal, May 1845.

while similar injuries of the thigh obviously require amputation at the trochanters. The same observation will apply to tumours of the bones, those of the tibia and fibula not requiring any more of the thigh-bone to be removed than may be suggested by convenience, and those of the thigh-bone itself demanding the highest practicable point of section. From this analysis it appears that taking merely the morbid condition into account, all the cases admitting of amputation at or below the middle of the thigh-bone, would admit of the operation being performed through the condyles.

In considering the relative advantages and disadvantages of amputating through the shaft or condyles of the thigh-bone, it may be remarked, that this, the largest member of the skeleton, contains the most extensive medullary cavity, and possesses the thickest mass of dense osseous tissue. Dense bone dies more readily than that of a spongy or cancellated structure, and the action of a saw, to say nothing of ruffling the periosteum, must always be apt to cause exfoliation, which by impeding union of the soft parts, delays union, and opposes its perfect completion, by increasing the scope afforded to contraction of the muscles. It would, however, be a narrow view to suppose that the direct effect of local injury is alone concerned in causing death of the bone after amputation; and there can be no doubt that inflammation of the medullary membrane may co-operate, if it does not sometimes act exclusively in its production. The most conclusive evidence in support of this opinion, is presented by those conical-shaped exfoliations, extending up the interior of the bone, sometimes to the length of several inches, which are occasionally extracted from stumps. One of these in Mr. Syme's possession, taken from the humerus, is five inches long. And he believes the thigh-bone would be more fruitful of such exfoliations if amputation through it were not so fatal. But if the medullary membrane be liable to inflammation, suppuration of its texture and inflammation of the veins cannot fail to be the frequent consequence, especially in hospitals, where, notwithstanding every precaution, certain descriptions of injuries will always be apt to excite phlebitis, and other forms of spreading inflammation. But when the bone is divided through the condyles, nothing more than the epiphysis being concerned, the medullary membrane is not at all disturbed, while the cancellated texture is not liable to exfoliate, either from its proneness to die from injury, or through inflammation of any texture. It may, therefore, be expected that the operation would prove less fatal than when performed in the usual way; and that the stump would be less apt to prove imperfect, through protrusion of the bone. These expectations derive encouragement from the results of amputation at the ankle-joint, to which Mr. Syme was led by similar considerations. Of twelve cases in his own practice, and in nearly as many more in that of other practitioners, who have been induced to adopt it, this operation has not in a single instance been followed by either the death of the patient or exfoliation of the bone; and so far from selecting favorable cases for the purpose, Mr. Syme has repeatedly removed the foot in circumstances where he would have declined amputating the leg. Amputation at the condyles of the femur is not a less safe and advantageous substitute for amputation through the shaft of the thigh-bone, than amputation at the ankle is now found to be for removing the leg below the knee.

The following was Mr. Syme's mode of operating in the first instance: having applied a tourniquet, so as to compress the artery where it enters the popliteal space, an incision was made across the knee on a line with

the *upper* edge of the patella; the knife was then pushed from one side to the other under the joint, a flap cut from the calf of the leg, and finally the condyles of the thigh-bone sawn through, so as to remove the whole articulating surface. On bringing the edges of the wound together, the flaps were found scarcely long enough, as they required a little stretching to meet, and when stitched, appeared more tense than is usually consistent with adhesive union; and the recovery, although complete, was rendered slow. Accordingly, in the second case, profiting by experience, Mr. Syme made the anterior semilunar incision in a line with the *lower* edge of the patella, and had the integuments retracted before cutting into the joint above this bone. The posterior flap requires to be very long, to the full extent of the gastrocnemii muscles; care being taken to avoid preserving more than a moderate portion in regard to thickness. In this second case union was nearly completed by the first intention, and recovery took place very rapidly.

Professor Syme states—1. That no doubt can exist as to the safety of amputating at the knee, and of the expediency of doing so with a view to avert the danger of operating through the shaft of the thigh-bone. 2. That the operation is attended with special advantages, such as the greater length of the stump which, particularly in females, must be desirable for the sake of appearance, and may perhaps be made available for using a support admitting of flexion at the knee. The operation is preferable also on account of the facility of using the tourniquet, and the patient's sufferings being less.

Mr. Fergusson of King's College Hospital has repeated this operation,* adopting the lower line above described for the primary incision. He states there are other good reasons in favour of the operation besides those offered by Mr. Syme. It is a maxim that the danger of amputations increases as they approach the trunk, and it is accordingly an advantage to perform them as low down as possible: again, hitherto all the soft parts have been reserved from the thigh alone to form the stump; in the method before us, the flap for a stump is taken from the leg, where, in the case in question, there was ample material for making a flap of any extent required.

Mr. Fergusson makes one objection,—the difficulty of securing the popliteal artery. The vessel was so surrounded by effused lymph, and condensed cellular tissue, that he had to slit up the tissues ere he could seize it with the forceps, and even then, it was with no inconsiderable trouble that he could get a ligature placed so as to stop the flow of blood. The result, however, was such as to encourage him to follow a similar proceeding in the next eligible case.

40. *Amputation of the ankle-joint.*—Dr. Handyside, of the Royal Infirmary, Edinburgh, has forwarded us several papers containing cases intended to assist in forming an estimate of the relative merits of amputation below the knee and at the ankle-joint, for caries of the joint and tarsus. He describes the method of operating by antero-posterior flaps, as practised by Professor Syme, the soft parts of the heel being included in the posterior flap, and the flaps meeting transversely in front of the anterior margin of the lower end of the tibia; but Dr. Handyside recommends in preference a method by antero-lateral flaps. This operation is described as follows:—A strong bistoury was entered in front of the joint, and midway between the malleoli. From this point an incision was carried forwards, over the

* Lancet, July 19, 1845.

side of the instep, in a semicircular direction, and then downwards to the middle line of the foot, terminating immediately in front of the ball of the heel. The extremities of this incision were met by another and a similar one on the outer aspect of the joint, the second one terminating where the first had been commenced. The flaps were then dissected backwards,—the tendo Achillis was easily divided at its attachment to the os calcis,—and the separation of the foot was readily accomplished. The malleoli were removed by the saw, and along with them about one eighth of an inch of the lower end of the tibia, although the cartilaginous surface of the latter was not diseased. The anterior tibial and external plantar arteries were tied. After the introduction of the sutures, which were five in number, the flaps covered the bone completely, and the flesh of the ball of the heel was situated, as in the antero-posterior flap operation, below the extremities of the bones. A bandage was then applied to support the stump. The flaps united almost entirely by the first intention, and a month afterwards the patient could rest his weight on the stump; the ball of the heel continued to form an excellent cushion beneath the ends of the bones; the cicatrix was situated vertically on the fore part of the stump; it did not exceed two inches in length; and the leg was only an inch and a half shorter than the other, so that the patient could walk easily with a high-heeled padded shoe.

This operation is inapplicable in some instances, as in severe injuries at the ankle-joint with extensive contusion and laceration of the soft parts, or acute gangrene of the foot, &c., and therefore it cannot entirely supersede amputation of the leg; still it has been performed in more than twenty cases in Edinburgh, all the patients, except one, recovering, and no doubt can be entertained that it is less dangerous to life. It has many advantages over Mr. Syme's method; the flaps meeting vertically in front—the facility afforded of incising the pad of the heel, if necessary, backwards from the point where the two antero-lateral incisions meet—there being no danger from sloughing, since the posterior tibial artery is not divided—the operation being much more easily and rapidly performed—and the readiness with which, should suppuration take place, the matter drains from the lower commissure of the flaps,—are particularly enumerated. In separating the malleoli, it is better to employ the saw than the cutting pliers, as a thin slice of the lower end of the tibia ought always to be removed.

§ IX.—*Aneurism, and the Ligature of Arteries.*

41. The labours of the last six months tend still further to elucidate the important subject of the various forms of aneurism, and their treatment. M. A. Bérard has described *a new form of varicose aneurism*.* Authors, he states, describe two species of the disease—*the aneurismal varix*, which is a direct communication between the vein and the artery, and the true *varicose aneurism*, where a tumour exists between the two vessels circumscribed by the neighbouring cellular tissue. M. Berard's is a variety of this second species. Instead of forming a direct passage of communication between the two vessels, the tumour constitutes a sort of diverticulum on the parietes of the vein, at a distance from the artery, while a communication exists through the parietes of the vein contiguous to the artery into the latter vessel, as in the aneurismal varix. The case of a man whose brachial artery was wounded in bleeding is given. After having emptied the sac of the fluid blood and clots which it contained, M. Bérard placed a ligature on the

* Gaz. Méd. June 7, 1845.

artery two centimetres above the point whence the blood escaped at the bottom of the wound. Still, blood continued to flow,—black when the artery was compressed, both arterial and venous when the compression was removed. It was now ascertained that deep down the artery presented on its anterior parietes a large wound, nearly transverse, more than half way across the vessel. The posterior parietes of the vein presented a wound exactly corresponding with that in the artery. On the anterior parietes of the vein a third wound was discovered, exactly similar to the two former, and in the front of the vein there was an aneurismal sac. Thus the sac received the blood of the artery, mediately. Adhesion between the vein and artery below the puncture rendered it necessary to include them in the same ligature, when all hemorrhage instantly ceased.

M. Bérard believes this form of varicose aneurism exists much more frequently than that intermediate between the vein and artery, although not hitherto described.

42. *Ligature of arteries.*—Several important cases have been put on record during the last six months, and considerable discussion entered into upon the principles of the remedy. (Arts. 75, 85.)

a. Common carotid.—Dr. Post, surgeon to the New York Hospital, gives a case of ligature of this artery for a subcutaneous venous erectile tumour of the cheek.* The patient died of phlebitis of the internal jugular vein, which was distended with purulent matter and shreds of fibrine. The inflammation of the vein extended to the base of the cranium, and pus was deposited between the membranes of the brain. The vein was not exposed or disturbed in any of its relations during the operation.

Dr. J. W. Campbell† has reported a case of aneurism of the innominata, which occurred suddenly while the patient was splitting wood with an axe, and increased rapidly. After the portions of tumour presenting on the right side of the neck, immediately above the sterno-clavicular articulation, had reached above $3\frac{1}{4}$ in. by $2\frac{1}{2}$ in. in dimensions, and its parietes had become very thin, a single silk ligature was passed round the common carotid artery, and firmly secured by a common double knot, one end being cut off. The aneurismal tumour disappeared immediately for several minutes. It gradually returned, but did not nearly regain its former size, and was much softer, more compressible, and less pulsatile. Four days afterwards the tumour was diminished to the size of a walnut. Bleeding was subsequently repeatedly necessary, with antiphlogistics and sedatives. On the fourteenth day the ligature was still firm, "the tumour quite flat." On the next day the patient imprudently exposed himself to cold, and had a febrile attack. A pulsating tumour now presented itself, extending from the cartilage of the third rib to the clavicle. On the nineteenth day from the operation there was great dyspnœa and other fatal symptoms; two pulsating tumours were felt rising up on both sides of the sternum, the larger one on the right side, in the situation of the original aneurismal tumour; and death took place in a few hours. On post-mortem examination, the aneurism within the chest resembled very much, in size and appearance, the heart inclosed in the pericardium. The symptoms, treatment, and post-mortem appearances are particularly detailed, and the case altogether forms a most interesting illustration of this fatal disease.

M. Lewis Bos describes a case in which the common carotid was tied, with a fatal result, for a *tumour of the diploe*, on the right side of the head,

* Dublin Med. Press, Oct. 8.

† British American Journal of Medical and Physical Science, April 1845.

in a girl aged 17 years.* The tumour arose from a blow received twenty months before, was very large, and occupied the orbital and the frontal and right temporal regions. It was characterized by a crepitation and crackling, like parchment; the subjacent bones being very thin. In places where the bone was deficient a pulsation isochronous with that at the wrist was felt. Compression produced no cerebral symptoms. The right eye was greatly disorganized, and vision destroyed. The artery was tied to arrest the nutrition and rapid growth of the tumour; the first effects appeared to be satisfactory, pain subsiding, and the volume of the tumour diminishing; but ultimately it inflamed and suppurated, and fever, diarrhœa, and hemorrhage supervened, and the patient died about six weeks from the operation. On post-mortem examination the tumour was found to contain putrid matter and osseous fragments; a large extent of bone was in a state of necrosis, and the brain was in part exposed. In one part, where the morbid growth appeared to be in its first stage, the external table of the bone was as thin as paper, and in places altogether destroyed, being replaced by a resistant fibrous membrane, without pericranium. The interior was divided by fibrous bands, over which blood-vessels ramified. There was suppuration of the brain. The carotid was obliterated above and below the ligature, and at the point corresponding with the origin of the superior thyroid, externally, there was a large opening, by which the arteries communicated with an abscess, filled with pus and coagulated blood, reaching to the carotid canal at the base of the cranium. The pneumogastric nerve and superior cervical ganglion were surrounded by pus.

b. External iliac.—A case is put on record in which this artery was tied for femoral aneurism by Mr. B. Cooper,†—result uncertain; another case in which the external iliac was tied by Dr. Duncan,—successful (Abstract, art. 75); a third by Mr. Liston,—fatal (Abstract, art. 85). We have heard of a fourth by Mr. Keate at St. George's Hospital,—fatal from peritonitis and cellular inflammation extending to the kidneys.

c. The femoral artery.—A successful case of ligature of this artery, for popliteal aneurism, occurred to Mr. Hancock.‡ Another successful case is reported by Dr. Nottingham,§ in which the patient died subsequently of another disease, with an important post-mortem examination, which afforded an additional illustration, that for the cure of aneurism it is not necessary that the circulation of the vessel should be entirely stopped.

43. *On the mortality arising from ligature of the subclavian artery.*—Dr. B. G. Norris has an excellent article on this subject.‖ According to a statistical paper by Mr. Phillips, one third of the cases of ligature of the large arteries, by Hunter's method, still prove fatal. By a table, drawn up by Dr. Norris, of operations performed on the subclavian, embracing all the cases that he could find recorded, amounting to 69, including those tied below the clavicle, and those tied within the scaleni muscles, it appears that 36 recovered and 33 died. Of 66 of these cases, 59 were males and 7 females; 6 of the females had aneurism, and 1 a tumour round the head of the humerus mistaken for it. Of 54 cases in which the affected side is mentioned, 31 were on the right, and 23 on the left side. The age is given in 59 cases; 1 under 20 years; 10 from 20 to 30; 22 from 30 to 40; 11 from 40 to 50; 6 from 50 to 60; 8 from 60 to 70; 1 above 70.

Of the 69 operations, 56 were for the cure of aneurism; 9 for wounds

* Archives Gén. Sept. 1845, p. 92.
† Med. Gaz. Aug. 29, 1845.
‡ Lancet, Oct. 4.
§ Guy's Hospital Reports, Oct. 1845, p. 201.
‖ American Journal of the Medical Sciences, July 1845.

and seeondary hemorrhages; 1 for rupture of the axillary artery in an attempt to reduce an old luxation; 3 for diseases supposed to be aneurismal.

In 35 of the cases it is noted that the ligature came away—in 1 on the 11th day; in 6 on the 12th; in 4 on the 13th; in 1 on the 14th; in 3 on the 15th; in 4 on the 16th; in 3 on the 17th; in 2 on the 18th; in 1 on the 19th; in 1 on the 20th; in 1 on the 21st; in 2 on the 22d; in 1 on the 27th; in 2 on the 31st; in 1 on the 43d; in 1 on the 47th; and in 1 on the 85th.

In 1 of the 69 cases pulsation was observed thirty hours after the operation, and the patient died after repeated hemorrhages. In a second it was noticed the day afterwards, and disappeared after two days, the patient rccovering. In a third it was observed two days afterwards, at the end of forty days was still strong, but ultimately the disease was cured.

With three exceptions, all the cases in which secondary hemorrhage occurred were fatal. In two of these it came on before the separation of the ligature, on the 16th and 19th days; in the third it came on the 4th and 5th days after the ligature had been cut off.

In six cases the tumour is stated to have *suppurated*, and was either opened or burst externally after the operation. Four were cured and two died. In two the suppuration occurred about the 7th week after the operation, and both did well.

In two cases *the contents of the tumour were discharged through the lungs*. In the first, the tumour began to increase eighteen days after the operation; eight days subsequently, six or eight ounces of bloody pus were brought up during a paroxysm of coughing, and the tumour suddenly diminished to half its size; it was punctured, and five ounces of the same kind of matter discharged with great relief; a cavity could now be distinctly felt between the sternal ends of the first and second ribs, through which the fluid had passed into the lungs, and the air passed into, and distended the sac whenever the patient coughed; sometimes escaping by the external opening. The discharge from the outer opening gradually diminished, and ceased in three weeks, and the patient recovered. In the second case, the tumour solidified after the operation, and its volume progressively diminished; nearly a month afterwards the patient had fever, and there was slight tenderness on the apex of the tumour; he was then suddenly seized with internal pain in the chest; the respiration throughout the right lung was bronchial, dullness occurred over the lower ribs, and the aneurismal tumour suddenly disappeared. The patient felt as if a fluid was passing from the pleuritic cavity into the tumour, and a splashing sound was heard at each inspiration, resembling the noise produced by shaking water in a closed vessel, and in a few days he died. On dissection, the aneurism was found to communicate by an aperture $1\frac{3}{4}$ in. long by $1\frac{1}{2}$ in. wide with the pleuritic cavity, situated between the first and second ribs, and obviously the result of ulcerative absorption, produced by pressure. Both ribs were denuded of periosteum; the right side of the chest contained nearly three quarts of bloody serum, mixed with laminated clots and flakes of lymph, the former of which had evidently been originally lodged in the aneurismal sac.

In connexion with these cases it may be well to notice one somewhat similar, recorded by M. Neret, of Nancy. The patient, aged 38, was admitted into the hospital for hæmoptysis, and found to labour under aneurism of the left subclavian, the size of a chesnut, which had existed about eight months. He died in a short time, and on dissection the aneurism was found to communicate with a cavity in the upper part of the lung, of

the size of the head of a new-born infant. A case of a similar kind is related by Mr. Guthrie in his work on the Arteries.

Of the 33 fatal cases in the table, 2 died from sloughing of the tumour; 9 from hæmorrhage coming on from the fourth to the thirty-third day; 5 from inflammation within the chest; 6 from mortification of the extremity; 1 from effusion in the brain; 1 from exhaustion; 1 from inflammation; 3 from suppuration of the tumour, and in 5 the cause of death is not given.

In two of the 69 cases, the aneurisms had been mistaken for abscesses and punctured. In three other cases malignant tumours were looked upon as aneurisms. The first was that of a female, aged 18, operated upon in the Newcastle Infirmary; it proved to be a fungus hæmatodes, became less after the ligature; but speedily assumed a serious aspect and terminated life; at least, an inch of the artery was found obliterated. The second was a medullary sarcoma of the upper part of the humerus. In the third the artery was taken up in April 1835, the aneurism supposed to be cured; the 2d of July the patient died of dropsy, and, on dissection, it became evident that no aneurism had existed. The tumour was of a dense structure and lying over the artery.

Some of the most celebrated operators have failed in their efforts to pass a ligature round the subclavian. In a very large aneurism, the clavicle being thrust upwards, so as to make it impossible to pass a ligature under the artery without incurring the risk of including some of the nerves, Sir Astley Cooper abandoned the attempt. In a large aneurism on the right side, M. Dupuytren, in 1818, believed he had succeeded, after one hour and twenty minutes in placing a ligature on the subclavian from above the clavicle. Pulsation continued after the operation, and after death, which occurred on the ninth day, the ligature was found loosely knotted on that portion of the fourth cervical, which afterwards becomes the musculo-cutaneous nerve, and the artery was not included. In a soldier, aged 27, with hemorrhage in the armpit, from a wound received in a duel, Lallemand attempted, without success, to place a ligature on the subclavian above the clavicle, the hemorrhage was arrested by tying the wounded vessel, and he died on the following day. Mr. Cusack, of Dublin, attempted to place a ligature on the subclavian in its third stage: the aneurism was penetrated and an alarming gush of blood followed, which was arrested by plugging the wound; the man survived ten days, but died of hemorrhage.

In one case in the table the sac was accidentally punctured with the needle, in the attempt to pass it beneath the vessel, which gave rise to terrific hemorrhage after the ligature was secured, and was only checked by a sponge tent and pressure.

In a case by Liston (the first successful operation for axillary aneurism in Great Britain,) the inferior nervous band passing out to form the axillary plexus was surrounded, instead of the artery, by the ligature—the mistake discovered, this ligature was used to pull the nerve a little upwards so as to admit of the more ready exposure and deligation of the artery.

In cases of great difficulty in passing the ligature round the artery, it has been proposed by Mr. Hargrave and M. Cruveilhier to saw through, or excise a portion of the clavicle, a procedure which we should suppose would tend greatly to increase the danger of the operation.

44. *Treatment of aneurism by compression.*—Two cases have come be-

fore us since the last Report (Abstract, vol. I., p. 233). The first by W. R. Jolly, Esq.*

A green grocer, aged 38, with impaired general health, and disease of the bladder, on taking violent walking exercise, one day in April 1844, was suddenly attacked with pain behind his right knee, followed immediately by a throbbing tumour about the size of a walnut. He went to bed, but could not rest for the pulsation, and on the following morning was unable to walk. By the 13th of July the aneurism had greatly increased in size. On the 23d a tourniquet was placed at the upper part of the thigh, and pressure maintained upon the vessel. On the 27th the pressure was lessened, as the patient complained of great uneasiness and restlessness. The 30th the pressure increased. August 5th, the tumour was more circumscribed, with less pain in the leg than formerly. 15th. Tumour very hard, less pulsation and bruit. 25th. Leg bandaged with a flannel roller from the feet upwards, and a pad of lint placed over the aneurism. Sept. 1st. No more severe pain; tumour considerably decreased; murmur still heard, but no pulsation in the tumour, or in the course of the artery between it and the pressure. 16th. The presse-artère removed. 20th. Allowed to take exercise. In July 1845, there was no trace of the disease. During the treatment hydrochlorate of morphia was freely employed.

The second case is described by Mr. Craig† as an aneurismal varix at the bend of the arm, but we should rather consider it as one of the varieties of varicose aneurism. It resulted from venesection. An attempt was made to cure it by direct pressure on the tumour, which failed, and was accordingly abandoned. Compression was then made by means of an apparatus resembling the obsolete arched tourniquet, and the disease was cured.

45. *Aneurisms and pulsatile tumours of bones.*—These diseases which have hitherto been regarded by practitioners as cases of cancer, and have been nearly, if not entirely overlooked as a distinct subject of investigation by systematic writers, are beginning to excite particular attention. Several long articles on the subject have appeared on the occasion of an operation performed by M. Nelaton for the cure of the disease.‡ These articles are extremely interesting in reference to the nature of the affection, and Mr. Stanley's paper is especially important as respects diagnosis, we accordingly subjoin a pretty full report of them.

Aneurismal tumours of bones are described as differing considerably in their character; they are sometimes analogous to the erectile tumours of the soft parts, being formed of vascular tissue analogous to cavernous tissue. Sometimes they consist of a single cavity containing liquid or coagulated blood into which several arteries open—true aneurismal sacs analogous to those in the soft parts, with this difference, that they receive their blood from a greater or less number of vessels instead of from one arterial trunk. When uncomplicated with any other affection, as, for instance, a cancer, the appearance of the tumour is in some instances preceded by vague and transient pains, which soon become fixed and permanent; but most frequently the disease commences more abruptly, the patient suddenly expcriencing an extremely severe pain, accompanied with a creaking sensation in the neighbourhood of an articulation; this pain persists for two or three months, and then a tumour may be observed.

The tumour is at first scarcely perceptible, and may easily escape an ob-

* Provincial Med. and Surg. Journal, Aug. 20, 1845. † Med. Gaz.
‡ Gaz. des Hôpitaux, May 15, 29, June 19.

server who is not very attentive, but it soon increases and presents the following characters. It rises considerably above the surface, the skin which covers it is at first of a natural colour, but after a time it takes a rosy or violet tint; by its transparency it allows numerous veins in the subcutaneous cellular tissue to be seen, its base is lost in the neighbouring soft parts so that its limits are with difficulty defined, still it may be ascertained by the touch that it is continuous with the subjacent bone; by the touch also it may be ascertained that the tumefied part has a variable consistence, being soft and fluctuating in certain parts and resisting in others, and on pressing the hardest points a sensation may be felt comparable with the crackling of dry parchment, or the bruising of egg shells produced by the osseous shell giving under the fingers. But one of the most characteristic symptoms of this tumour is pulsation synchronous with the arterial pulse, which does not consist in a simple elevation, but of a movement of expansion as in true aneurisms, which is owing to the influx of a wave of blood at each ventricular contraction, and can be stopped by compressing the principal artery of the limb. While the course of the blood is thus arrested, the tumour becomes softer and more flaccid, and fluctuation may be felt, which is otherwise difficult to be ascertained. Slow, continued pressure reduces the tumour, and the skin may be compressed so as to perceive an excavation in the subjacent bone. Notwithstanding the pulsation, *no bruit de soufflet can be heard.* The tumours developed near articulations generally impede their motions, complete extension becomes impracticable, both on account of the painful traction which the ligaments exercise on the diseased bone into which they are inserted, and on account of the tension of the muscles which pass over the tumour and compress it. In all cases there is severe and continued pain which pressure increases; sometimes also lancinating pains. The progress of the disease is generally very slow, the tumour being sometimes years before it acquires a considerable volume. It is uncertain whether having attained a certain development, they would burst like aneurisms in the soft parts, since there is no case on record of such an event where it was certain that it was truly an aneurism of bone and not a cancerous tumour with pulsation.

The disease occurs in young subjects or adults, and its causes are obscure. It sometimes follows external violence, contusions, or a sprain of a neighbouring joint; still it remains doubtful whether these causes produce it, and it is more probable that they merely give rise to the first symptom noticed of a pre-existing affection. It may be confounded, first, with an aneurism of the soft parts; secondly, with cancer of the bone which pulsates; thirdly, with an encysted tumour of a bone. Where it is complicated with cancer of the bone the diagnosis is of less consequence, since every therapeutic indication has reference to the latter disease. The most important diagnostics of the two diseases are—first, that uncomplicated aneurism of a bone disappears completely, or nearly so by continued pressure, which in cancer, although diminished by the expulsion of the blood which its numerous vessels contains, a considerable mass cannot by pressure be made to disappear. Secondly, cancerous tumours of bone with pulsation have generally a slight bruit which is never observed in aneurism. Encysted osseous tumours can only be confounded with aneurism so long as the osseous coat of the latter is sufficiently firm to prevent pulsation being seen.

This disease is always serious; if not resisted by treatment, it soon renders a limb totally unfit for use. It can only be cured by an operation, and

this always a dangerous one. In the cases on record relapses are frequent, even after such an operation. No topical application to the tumour can cure it. The operations which have been proposed are—1. Resection of the portion of diseased bone. 2. Amputation. 3. Ligature of the trunk of the artery. When the disease has reached a certain stage, as in a case recorded by Scarpa, where the articular extremity of the tibia was completely separated from the shaft of the bone, amputation is the only resource. Dupuytren, in 1819, first applied a ligature, as in ordinary cases of aneurism; in 1826 Lallemand repeated the operation, and Roux has published two new cases. In Dupuytren's case the pulsation ceased, but the patient left the hospital with a tumour, and after the lapse of about six years the leg had to be amputated, Lallemand's case is said to have been cured; but we have no particulars by which we can determine that point. In one of M. Roux's cases the brachial artery was tied for a pulsatile tumour of the radius; but the disease was complicated with cancer, and the limb had to be removed a few weeks subsequently. In M. Roux's second case the cure was complete. M. Nelaton conceives that although these results are not completely satisfactory, they justify the application of the ligature before resorting to amputation.

M. Nelaton concludes his memoir with a case of aneurism of the internal condyle of the femur, in which the femoral artery was tied. Without any known cause the patient, a man of 22 years of age, felt a little difficulty in flexing the right leg on the thigh, which was most marked when he descended the steps of a ladder; this was soon followed by a remittent pain in the right knee, more violent at night than in the day so as to disturb his rest. A small elevation soon appeared over the internal condyle of the thigh, which gradually increased, and then appeared to become stationary. There was a sense of numbness in the limb, and the patient himself remarked pulsations in the tumour, which corresponded with the motions of the heart, and were most violent when the limb was extended and the knee laid flat on its internal side. For some time past the pain had increased so as totally to deprive the patient of sleep, and was followed by swelling of the foot and leg.

On examination the tumour presented all the characters of an aneurism of the bone, the details of which appear to be very accurately described by M. Nelaton. M. Roux examined the case, and diagnosticated a sanguineous fungoid or an aneurismal tumour of the internal condyle of the femur, which had at present destroyed only a limited portion of the osseous tissue.

The absence of a bruit de soufflet, the almost complete reduction of the tumour by pressure, the manifest uniform expansion of the tumour, synchronous with the radial pulse, the absence of lancinating pains, and also of varicose veins in its vicinity, and especially on its cutaneous surface, assured M. Nelaton that it was an aneurism; but the memoir here enters into a theoretical discussion on the nature of the disease, and the opinion appears to be entertained that, after all, aneurism of bone is but one stage of cancer; that the aneurismal pouch is preceded by the formation of erectile tissue, which, in the progress of the disease, breaks down into an open cavity; and that in its last stage of development the erectile tissue is neither more nor less than cancer. The facts recorded by Scarpa and the opinions of Professor Roux lead to this conclusion.

Mr. Stanley has also published a paper "*On pulsating tumours of bone; with the account of a case in which a ligature was placed around the*

*common iliac artery."** Mr. Stanley considers there are three causes of pulsation in the tumours of bone:—1, the proximity of the tumour to a large artery; 2, the development of a sort of erectile tissue within the tumour; 3, the enlargement of the arteries of the bone. Six examples of the first, which is the most frequent cause, are brought forward; one proved to be an encephaloid tumour, originating in the humerus; another was a compound of soft fibrous and dense osseous tissue; they all differed in their nature, and originated in different bones, but agreed in the circumstance that no other source of pulsation was discoverable in them than the contiguity of large arteries. A principal artery was tied in several of these cases, under the belief that the tumours were aneurismal.

In a case of recent occurrence in St. Bartholomew's Hospital, there was a structure capable of enlargement by the distension of its vessels and cells, and assuming these to have been continuous with the surrounding arteries, the rush of blood into this structure might give to the whole mass a pulsation, resembling that of aneurism. Two cases are related in which the pulsation was ascribed to this cause. Several cases coming under the third head are also referred to.

Mr. Stanley states that the density and resistance of the immediate investments of these tumours appear to have a material influence over the production of pulsation in them. He even doubts whether any of them would pulsate without the resistance derived in one or other direction from the bone or its coverings. A tumour originating in soft parts, and unconnected with any bone, but situated close to a large artery, and confined within resisting structures, and thus approximating in its conditions to the pulsating tumour in bone, may, like it, pulsate in a manner to be mistaken for aneurism. Mr. Earle tied the subclavian artery for a pulsating tumour below the left clavicle, which had the appearance of aneurism; the man died six years afterwards; the axillary artery presented no indication of aneurism, but immediately behind the artery was a solid tumour, which had originated in the sheath of a large nerve.

Mr. Stanley's paper, so far as we can collect its import from the journals, is well calculated to put surgeons on their guard as to the diagnosis of these tumours. His case was a pulsating tumour of the pelvis, having its chief attachment to the left ileum, and projecting from both surfaces of the bone. It reached downwards to Poupart's ligament, and to the extent of about three inches into the abdomen. It felt moderately firm, and a little below the crista, near the anterior superior spine, a small moveable piece of bone was discovered, apparently involved in the tumour. The tumour pulsated throughout with the deep heavy beat of aneurism. *A bellows-sound was plainly recognized.* In consultation the preponderance of opinion was in favour of its being an aneurism. The common iliac artery was tied, and the man died on the third day, of peritonitis. On post-mortem examination, a medullary tumour was found, about the size of a filbert, in the wall of the left ventricle of the heart, and medullary matter in the bronchial glands and lungs. The tumour in the pelvis was composed of a spongy tissue, connected with the ileum, with cells and convoluted vessels distributed through it, and there was a tumour in the arm about the size of an orange, which before death appeared to be innocent, but which now turned out to be identical in structure with the tumour in the pelvis.

It is remarked that this case tends to show that little value can be at-

* Medico-Chirurgical Transactions, vol. 28, Art. 9.

tached to the presence of a bellows-sound in the diagnosis, between aneurism and the pulsating tumour of bone. Still, inasmuch as this was of a fungoid nature, and it is admitted that in such cases a bruit de soufflet may occur, it does not altogether disprove the statement in the former page, that in an "aneurism of a bone" no bruit de soufflet can be heard.

Mr. Toynbee stated to the Medico-Chirurgical Society a case of pulsating tumour of the parietal bones, in a young man of 19, who died of consumption, where the tumour was almost entirely composed of blood-vessels, and contained no cells or other structure.

We learn from an experienced hospital surgeon of many years' standing, that he has met with but one case of this kind; a man's femur was amputated for a tumour, which, on dissection, was found to consist of a large mass of coagulated blood within the bone. The disease was referred to fungus hæmatodes. The term *osteo-aneurism* is applied by Professor Miller to the above affections of the bones.*

§ X.—*Constitutional Diseases.*

46. *Syphilis.*—M. Ricord† observes that the syphilitic poison is eminently alterant and disorganizing, that it produces a manifest alteration in the elements of the blood, and that the essence of the disease is hyposthenic. He reiterates his former denial that any mode of administering mercury after an infectious coition, will enable us to secure the immunity for ever of the system from constitutional syphilis. He denies also that mercury produces fever, or causes falling off of the hair; on the contrary, it prevents the latter, and when fever occurs, it behoves the practitioner to look carefully to the lungs and other vital organs. In enumerating the accidents caused by mercury, he cites the case of a man under mercurial treatment, who died of suppuration of the brain, where mercury was obtained after death from the brain by chemical analysis. In a course of lectures on the subject of syphilis by M. Lallemand, now publishing in the 'Medical Times,'‡ many very important points in reference to the transmission of the disease congenitally are strongly insisted upon, and illustrated by cases. Children are affected with syphilis without the mother ever having exhibited any symptoms, in which case the transmission must be by the father, who at the time of, or for some years previous to the conception of the child, may not have exhibited any evidence of the disease. Cases are detailed of lupus after primary syphilitic and gonorrheal affections; and of the most hideous leprosy, cured by anti-venereals; and others tending to prove, to the contrary of the prevailing opinion, that venereal affections when neglected or badly treated, are as fatal as formerly.

A second edition of Mr. Langston Parker's work on 'Syphilis' reached us as we were closing this Report, but as we intend to give a *resumé* of the recent improvements of practice in this disease, in our next volume, we confine ourselves at present to a few cursory gleanings on the subject. M. Boys de Loury of St. Lazarus,§ recommends opening buboes in the groin, early after the formation of pus, by a small subcutaneous puncture; he employs a bistoury with a long narrow blade, as used in tenotomy, and introducing it from below upwards, and from within outwards: moving the point of the instrument under the skin, he breaks up the tissue much as the lens is broken up by the cataract needle; the matter is evacuated by

* Lib. cit. p. 591.
† Gaz. des Hôpitaux, Aug. 15.
‡ Sept. 13, 1845.
§ Gaz. Méd.

gentle pressure, and the wound kept open a few days with some shreds of charpie; several years' experience have confirmed the advantages of the plan. Mr. Arnott* holds the opinion that it is a mistake to suppose that the venereal testicle never suppurates, and he gives two cases of *venereal abscess of the testis*, corroborative of his views; and after describing various venereal affections of the tongue, and their appropriate treatment, Mr. Lawrence† remarks that the beneficial influence of mercury in ulcers of the tongue, mouth, and throat, has always appeared to him to afford the most unequivocal evidence of its peculiar anti-syphilitic virtues; for while the sound mucous membrane is inflamed and ulcerated by the action of the remedy, the contiguous venereal ulceration becomes altered in character and heals rapidly.

47. *Malignant diseases.*—We have nothing of very great importance on this subject to detail. M. Manec, surgeon of Salpêtrière, is reported‡ as having obtained daily the most favorable results in the treatment of *external cancer* by arsenical caustics, the remedy of Fabricius, Tulpius, Dubois, and Dupuytren: his formula is, arsenic acid 0·30 parts; cinnibar 1·50 parts; calcined sponge 0·75 parts. Mr. George,§ surgeon to the Bath Hospital, describes the case of a woman aged 35, in whom an open fungoid tumour attained the size of a pullet's egg in the hollow of her left foot; there were several smaller tumours surrounding it, and the glands in the upper part of the thigh were enlarged and tender. After taking Brandish's alkaline solution for about six weeks the disease began to give way, and again in about six weeks she had recovered her health, the tumour had contracted to the base of the skin, had cicatrized, many of the surrounding tubercles had disappeared, and the glands in the thigh were much reduced in size. She remained well both as to her foot and general health for eight months, when the latter began to flag, and she died with jaundice and other hepatic symptoms in about six weeks, previously to which the femoral glands had attained the size of a large hen's egg, and many tumours appeared beneath the skin on the thorax and abdomen. On dissection, encephaloid tubera in every stage of degeneration were found in both lungs, in the liver, beneath the pleura, in the subserous membrane of the left ventricle of the heart, in the submucous tissue of the ileum, and in the inguinal glands which were united into a large mass.—The post-mortem examination of an enormous cancerous tumour with internal deposits is described by Sir Charles Aldis,‖—and Dr. Fletcher gives a case of fungoid disease, which had developed itself gradually in the space of a year and a half over various parts of the body, in the form of nodules of various sizes, increasing from that of a pin's head. There were urgent symptoms of pressure upon the bronchi.¶ This case may be advantageously compared with Art. 34, p. 73, among our extracts, and with various forms of disease which have been referred by authors to the genus molluscum.

Some of our readers may not be aware of the occurrence of fungus hæmatodes in the dog. The following case well illustrates the constitutional nature of the affection in this animal. A large fungus in the neck of a pointer was first observed about the size of a pea, five months previously;** the tumour was removed; there was a full discharge of healthy matter from the wound, which healed in three weeks; three months afterwards another

* Med. Gaz. July 23.
† Ib. Aug. 22.
‡ Archives Gén. Août 1845.
§ Prov. Med. and Surg. Journal, Oct. 22.
‖ Med. Times, Nov. 1.
¶ Prov. Med. and Surg. Journal, Oct. 22.
** The Dog; by William Youatt, 1845, p. 248.

tumour had attained nearly the size of the former one; this also was removed; five days after the removal of the second, a third made its appearance. This also was removed, but in a few days the dog died, and on exposing the cavity of the thorax it was almost covered with tumours, from the size of a pea to that of a pigeon's egg; the intercostals had many adhering to them, a few small ones were developed in the heart, and three in the diaphragm. These tumours were nearly white, rather hard, and of a glandular substance; the external ones soft, red, and destitute of blood-vessels (?), except the first. There was great emaciation.

§ XI.—*Varia.*

48. *Varicocele.*—Surgical writers in this country so frequently refer to Breschet's method, Ricord's method, &c., of obtaining a *radical cure* of this complaint, without giving any account whatever of what the method consists in, that we have considered it important to give the following statement of the various plans resorted to, condensed from a memoir published by M. Helot.*

There are rules common to every operation. To render the veins more prominent, the patient should first walk for an hour or two, and in cold seasons, a hot bath should be prescribed. The operation should be performed as much as possible in the erect position, but with a bed at hand, in case of syncope. The varicose veins must be carefully separated from the vas deferens and spermatic artery, for which purpose the whole of the tumour should be held between the thumb and the indicator and middle finger, and the vas deferens sought for with the other hand. This canal, generally about the size of a crow-quill, hard, elastic, rolling under the fingers, on pressure giving pain analogous to that which is produced by compression of the testicle, is easily separated from the disease. It is usually found behind and within the varicose veins, and should be there retained. It is necessary to be satisfied also of the existence of two vasa deferentia, external to the cutaneous fold in which the operation is to be performed.

Breschet's method.—This consists in the application of two pairs of forceps which, by compression, produce mortification of the skin and veins included in their teeth. The forceps are about four inches long. The male branch carries two vertical shafts, which fit into two corresponding mortices in the female branch. By the union of the two branches, the parallelism of the two teeth is maintained, whatever may be the degree of their approximation to, or separation from, each other. The constriction is effected by means of a compressing screw. The teeth of the forceps are cut with a slanting edge like the blade of a knife, the edge of which is blunted, or rather rounded. These forceps will cut only by considerable pressure sustained for a long time. Various modifications have been proposed in the teeth of this instrument; thus, in M. Landouzy's forceps, one tooth is grooved so as to receive the other, cut into a slope, and dentated like a small saw. M. Chauviere afterwards adapted to the groove, a small blunt blade which could be applied or withdrawn at pleasure. Bérard, to avoid the veins of the skin escaping by the free extremity of the forceps, believed it necessary to add two needle points, which, penetrating behind the cluster of veins, would prevent them escaping from the compression. Behind the teeth in each of the branches, Breschet contrived a round opening, in which the external part of the fold of skin to be preserved might

* Archives Gén. des Méd. Juillet 1845.

lodge. M. Landouzy considerably enlarged this space, by making it quadrangular; his intention being to elongate the teeth of the forceps at pleasure, by means of small iron plates, which each of the branches carry, and which, rendered moveable by a screw, fill up the space to a greater or less extent at the will of the surgeon. These forceps in their various modifications are thus applied: while the surgeon seizes between the fingers, in a fold of the skin, all the varicose veins, so as to leave behind, the vas deferens and spermatic artery, which are connected together, an assistant clasps the superior part of the fold, with the teeth of the forceps, which are brought together by means of the screw, so as to produce a sufficient compression, to prevent the veins escaping; after which the surgeon, abandoning the fold, ascertains if all the veins have been firmly seized; then, at the inferior part of the scrotum at the most distant point possible from the testicle, forming a fold similar to the first, the surgeon keeps the varicose mass between his fingers until a second pair of forceps is securely applied.

According to M. Landouzy,* at the moment of constriction, the patient experiences a sharp pain which extends along the cord and sometimes produces syncope. During the first days, an active inflammation occurs. The skin of the scrotum becomes tense and painful to the touch, painful erections occur, which interrupt sleep, sometimes swelling of the testicle, and if gonorrhœa exists its symptoms are aggravated. Headache, severe fever, erysipelas, diffuse inflammation of the scrotum requiring incisions, sometimes take place subsequent to the operation, yet the patient gets well after two months' treatment. The complete section of the parts included between the teeth of the forceps is obtained from about the tenth to the fifteenth day; but the separation of the eschars, the irregularity of the edges of the wound, and the contraction of these edges, render the cicatrization of the wound protracted and difficult, extending even to a month or six weeks after the removal of the instrument.

Inflammatory symptoms must be combated. To avoid violent painful erections, care must be taken at the time of the operation to leave the upper part of the penis perfectly free. As the separated parts, resulting from the double wound produced by the application of the two pair of forceps, are very difficult to hold together, even when sustained by a very appropriate bandage, and remain separated from each other by the natural disposition of the parts, erections dragging the superior lip upwards, and the weight of the scrotum, the inferior lip downwards, a very important precaution requires to be taken in applying the forceps; it consists in preserving on the exterior of the part of the scrotum embraced by them, a pedicle of skin, which by lodging in the fold behind their teeth is not compressed; this pedicle will prevent the excessive gaping of the wound.

This operation is less severe, and much more seldom fatal than the ligature. Still in one case recorded, death supervened. A relapse may also take place. M. Landouzy cites a case in which the affection reappeared some months after the first operation, and he accounts for this circumstance by a large vein having escaped the forceps. In one case after a cure of the affection in the scrotum, it reappeared in the veins of the cord within the inguinal canal; the forceps were applied on a level with the external orifice of the canal, and the patient cured. Breschet is said to have operated on more than 100 individuals with success. In how many the cure was permanent is doubtful.

* Journal des Connaissances Médico-Chirurgicales, Mars 1838.

Sanson's method.—This consists in the application of forceps with flat and polished teeth for the purpose of arresting the circulation, and producing adhesion of the parietes of the veins, and obliteration by the formation of a clot without destruction of the tissues. This measure is only to be regarded as a palliative, more efficacious than some others that have been resorted to. The veins soon become permeable to blood again.

M. Renault's process.—A thread is conducted by means of a needle behind the varicose veins, the two ends brought forwards, and the veins and the skin strangulated by tying the thread on a cylinder of wood or a quill. By increasing the constriction daily, in a short time the veins and skin are divided, and the divided part heals as a simple wound.

M. Velpeau's process.—A strong needle is passed through the fold of skin, behind the varicose veins, and the constriction is effected on the needle by means of a figure of 8 thread, as in the operation for hare-lip; or, the ends of the needle being forcibly raised, a circular ligature is placed behind, which strangulates all the parts; the point of the needle is then nipped off, and the operation terminated. The ligature falls off about the tenth or twelfth day, with a complete section of the skin and veins. A second ligature may be placed about two fingers' breadth from the first, for the purpose of destroying a greater extent of vein. Serious accidents, as diffuse inflammation of the scrotum, and inflammation of the tunica vaginalis, have sometimes resulted from this operation. M. Velpeau appears to have abandoned it.

M. Ricord's process.—A straight needle carrying a double ligature, the extremity of which accordingly forms a noose, is carried through the fold of skin so as to pass between the vas deferens and the veins; then, letting the veins loose, and holding the skin only at the point of exit of the first needle, a second needle, having a double ligature also, is carried before the cluster of veins, and brought out by the opening made where the first needle entered; so that the varicocele is circumscribed before and behind by a double thread, with but one opening at each side. The two ends of the double ligature on each side are then passed through the corresponding noose of the other ligature. In this manner the veins are embraced in a slip-knot, which is to be tied. For this purpose it is only necessary to draw the threads tight, having fixed them in an instrument, the purpose of which is to serve as a fulcrum to the threads, so that a gradual compression may be employed till the veins are cut through. This instrument is of the shape of a horse-shoe, the extremity of each branch of which is pierced with a hole, in which the ligature is tied. Having passed through a groove on the convexity of the instrument, the two threads are joined by a knot on a small pivot placed in the centre.

By turning the pivot every day, the constriction is increased until the veins are cut through. When this takes place the two ends of the ligature form only a moveable seton in the subcutaneous wound, which, with the instrument, may all be removed together. When the varicocele is large, two ligatures may be employed to break the continuity of the veins in several points. A case is given in which a relapse occurred after this operation, and another case where an anomaly was met with in the situation of the testis; the epididymis being before and below the gland, and the vas deferens before the cluster of veins. Dr. Hélot remarks that this anomaly is not very infrequent, the importance of which fact may be easily understood.

In this operation by subcutaneous ligature of the veins, the division of the tissues is produced by inflammation and suppuration, the products

of inflammatory action escaping by the openings into the skin. In three cases out of fifteen, phlegmonous inflammation extended so as to require lancing to evacuate the pus; but this proved of little importance. M. Ricord has in no case been obliged to loosen the ligature before the veins were divided. The method first adopted by this surgeon, which consisted in turning the veins under the skin with a needle, and at once strangulating them with a single loop of cord, appears to Dr. Hélot preferable to the slip-knot. M. Ricord, who was at first content with the single ligature, substituted for it the one above described.

The simple subcutaneous ligature is applied as follows; a needle is passed through the fold of skin *behind* the veins, then returned through the opening from which it issued, and conducted immediately under the skin *before* the veins to the orifice where it first entered; the cluster of veins is thus inclosed in a loop of thread, the two ends of which pass out of the same opening; the constriction is at once made by tying them, and the operation completed. This operation has the advantage over those of Breschet and Velpeau in not producing loss of substance; which always becomes a large wound, and thus retards the cure. But it has the disadvantage of not diminishing the exaggerated volume of the scrotum; while the forceps of Breschet, by destroying the skin over a large space, forms in some measure a natural suspender, as well by the adhesion of the cicatrices as by the diminution of the scrotal envelopes.

M. Vidal's process.—1. A strong, straight needle, with a lance-shaped point is bored at the other extremity in the direction of its axis. A very fine silver thread, of the diameter of a large pin, folded at the end, is screwed upon this needle. By means of the needle the silver thread is carried through the fold of skin behind the cluster of veins. The thread thus placed behind the veins forms a noose, (?) of which the two ends project from the orifices by which the needle entered, and passes out of the skin. Between these two openings is placed the pad of a small bandage; it is on this species of small cushion that the thread is tied; below the knot a canulated probe is passed, which represents the handle of the old instrument employed for the compression of arteries, and is to be turned in the same way.

This lever being always turned the same way a very powerful compression may be obtained; by turning it the contrary way the constriction may be diminished at will.

II. *Twisting of the veins of the spermatic cord.*—A silver thread is passed behind the varicose veins as in the former process. Another thread, conducted by a needle like the former, is placed before the veins immediately under the skin, taking care that the needle enters and goes out by the same orifices which have served for the passage of the first needle. The extremities of the threads are then to be twisted. The first effect of this torsion is to contract the loop which contains the veins gradually. On turning this metallic cord on its axis it necessarily twists round with it the parts contained between the two threads which compose it. Thus the veins twist on this double metallic thread, as the rope twists on a capstan. A small pad is then placed on the skin between the openings for the metallic wires, the two ends of which are twisted upon it.

After stating that M. Vidal has published fifteen cases treated in this manner, Dr. Hélot remarks that this surgeon has exaggerated the gravity of this affection to justify his conscience in performing so many operations in so short a time. If varicocele is a very common complaint, it is at all events very seldom that it produces any serious consequences. The results

of the operation by ligature with torsion of the veins are nearly the same as those by Breschet's forceps, or the needle operation of Velpeau. It produces considerable loss of substance, and a eure is not obtained in less than six weeks or two months. With respect to relapses, time will determine the relative or absolute efficacy of this mode of treatment, which cannot be attended with less danger than the others.

49. *Sacrolumbar Hydrorachitis.*—Professor M. Paul Dubois has adopted *a new treatment* in this affection.* A female infant, in other respects well formed and healthy, presented a tumour on the inferior part of the lumbar region and superior part of the saerum. The skin which covered it was of a deep red colour, becoming darker and of a violet hue towards the centre; it had an appearance as if denuded of the epidermis. The presence of fluid in small quantity was easily recognized by the touch, and by pressing equally at all points the tumour might be partly reduced without occasioning symptoms of compression. On pinching the external parietes, severe pain was indicated by the infant's cries. The lower limbs moved naturally on the pelvis. On pressing the centre of the tumour the vertebral column was easily reached, and the disjunction readily detected. It was almost certain that the cavity of the arachnoid was the seat of the fluid. At the top of the tumour two points existed, from which serosity exuded, and another in the inferior part, being the commencement of ulceration.

To prevent ulceration, the day after birth M. Dubois punctured the tumour with a long straight *tenotome*, when a much larger quantity of serum escaped than was anticipated from its size. A strong solution of acetate of lead was then applied, and afterwards very moderate compression. On the following day the skin was changed in appearance; the small orifices from which serosity previously flowed were closed, the redness was less vivid, and the size diminished. On the sixth day another puncture was made, with the same result. The skin had nearly lost its unnatural redness. After this the liquid was much more rapidly reproduced; three days afterwards it was necessary to operate again—then again in three days—and lastly, a fifth time, two days subsequently to this.

The infant took nourishment well, but the discharge of serum debilitated it; there was no symptom of paralysis or spasms, although death was threatened. Under these circumstances, M. Dubois proceeded as follows:

The tumour was evidently somewhat diminished transversely; the skin was also improved. Having ascertained the possibility of bringing the two sides together at the base, he had two small iron plates made, eight centimetres long and ten millimetres broad, with one face concave and the other convex, and pierced through with many holes. At each extremity there was a small head supported on a narrow neck.

After puncturing the tumour anew, the professor proceeded thus:—An assistant pinched it up transversely, and brought the parietes as close together as possible; he then applied the small plates on each side, in the direction of the vertebral column, and as near as possible to its base, the convexity looked inwards; then leaving them to an assistant, who kept them in position, he fixed both, by bringing them as near as possible together with a thread twisted round the necks, which supported the rounded extremities of the plates.

In this manner the tumour was greatly contracted at its base, and its parietal fold supported by itself. To promote the development of the ad-

* Annales de la Chirurgie, July 1845, p. 272.

hesive process, two pins passing through the holes made in the instruments traversed the base of the tumour. The patient suffered much, in the evening was very ill, and the inferior extremities were powerfully flexed on the abdomen. Accordingly the instrument was withdrawn, and the patient died three days afterwards.

On post-mortem examination the vertebral column was found divided in the last three lumbar vertebræ, and in the superior part of the sacrum; violent inflammation had taken place throughout the arachnoid membrane, and pus was effused in its cavity; under the visceral fold a layer of pus was also observed. The membranes of the brain were inflamed, the lateral ventricles dilated, and loaded with sero-purulent fluid. The spinal marrow left its canal in the centre of the fissure, and adhered to the external parietes of the tumour, where it could not be followed, since it was lost in a shapeless purulent mass, with a strong gangrenous odour. It was impossible to recognize the sacral nerves until they left the sacral foramina. All the other viscera were healthy.

The paper proceeds to show that the following are the circumstances which ought to be taken into consideration, if the present state of surgical science justifies us in entertaining the question of operation in this disease.

As contraindicating any operation.—1. When there is any other malformation, as hydrocephalus, umbilical hernia, paralysis, a double tumour, &c. 2. When the tumour has a very large base, particularly vertically. 3. When the skin covering the tumour is incompletely formed and ulcerated. 4. When the tumour appears to be highly sensible on pressure, and especially when this sensibility exhibits itself acutely on pressure upon the most projecting part. 5. When the tumour cannot be moved in the slightest degree without pain. 6. When the fluctuation is perceived unequally, and when it appears to reach the finger of the observer more immediately if sought for at the summit of the tumour. The whole of these latter circumstances indicate the existence of hernia of the spinal marrow.

In favour of some operative measure.—1. When the child is otherwise perfect, and the tumour unique. 2. When the tumour is pediculated. 3. When the skin covering it is completely formed, and no ulceration exists, and when a uniform transparency of the tumour can be recognized through the skin. 4. When pressure exercised all over the tumour occasions little or no pain. 5. When the movement of the tumour is unattended with pain. 6. When the tumour fluctuates freely and uniformly under the whole external parietes.

Tumours which are formed of a serous cyst external to the dura mater frequently present these characters, and the instances of cure by operation are mainly referrible to such cases.

M. Dubois proposes to modify his plan, by making the plates longer and without orifices, and commencing the operation by passing through the tumour at its base, two, three, or four pins, according to its size, taking care to pass them from one side to the other quite at the base; then to apply the two plates under the ends of the pins, and to bring them together with threads as before, taking care to exert a uniform pressure at both extremities, so that they cannot slip from the base of the tumour, retained as they would be by the pins previously introduced.

The principle of M. Dubois's measure is to bring together the serous walls at the base of the tumour, forming a species of ligature, and the previous introduction of pins not only facilitates the application of the instrument, but renders the adhesive inflammation more prompt and efficacious.

The cutaneous pouch would be easily removed after the tumour closed at its base.

50. *Burns.*—The great fatality of these accidents treated by any of the accepted methods, both in hospital and in private practice, gives an interest to every new proposal, and to every modification of the various plans which have been adopted. In the Hôpital St. Louis, they have been recently treated by M. Jobert with great success by means of iced water.* In extensive burns the cold bath is used repeatedly, and in the intervals, the injured parts are kept covered with large pledgets of cloths steeped in cold water, and covered with bladders of ice. Patients are said to have recovered under this treatment who in all probability would have perished had it not been adopted. The cold water treatment is accompanied in bad cases with bleeding, low diet, and refreshing drinks, by which general reaction is completely checked. When the eschars are about to separate, the ice is replaced with simple applications of cold water. Under the treatment the patients feel refreshed, the pains abate, the fever diminishes, and they enjoy sleep, the restorative powers are invigorated, and a speedy cure occurs.

The theory employed to account for the efficacy of this treatment is, that mortification from a burn occurs the moment the caloric is applied, and even at places where nothing is appreciable, but where eschars appear at a later period. The fact must not, however, be overlooked that mortification may come on spontaneously from the phlegmonous reaction which is of a gangrenous nature, independently of the primary action of the caloric. The burned parts for a time remain very warm, and the whole adjacent tissues may be felt of a burning heat for a short period, and the primary and fundamental indication is the withdrawal by every possible means of the caloric accumulated in the injured part, whether it be that communicated by the original burn or that caused by reaction. M. Jobert is very severe on the use of cotton and other specifics from the East with "occult qualities."

Professor Miller is in favour of instant immersion in cold water,† and retaining the parts there, not for minutes, but for hours; but when a burn or scald involves a large part of the surface, he lays it down as a principle that nothing must be done to favour the depression, on which account the continuous use of cold cannot with propriety be employed. Chelius also favours the use of cold in the slightest degree of burns.‡ But the use of cold water and ice in cloths or in bladders was strongly advocated by Mr. James Earle. Mr. South's notes to Chelius comprise a resumé of the various remedies which have been in vogue§.

In the above Report, cases and operations are described, as nearly as is consistent with brevity, in the words of the respective authors. Several important articles have recently come to hand, which will furnish valuable matter for the next volume.

* Annales de Thérapeutique, May 1845.
† Lib. cit. p. 660.
‡ Lib. cit. p. 112.
§ Idem.

III.

REPORT ON THE PROGRESS OF MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN.

BY THE EDITOR.

§ I.—*Pregnancy—Labour—The puerperal State.*

1, *Signs of Pregnancy.*—The following aphorisms of M. Moreau* may be advantageously called to mind by those who have to decide the frequently all important question of the existence or non-existence of pregnancy:

1st. No one sign can determine a recent conception to a certainty,

2d. The existence of pregnancy cannot be infallibly determined by the so-called rational signs.

3d. The signs afforded by inspection are insufficient.

4th. Pregnancy can alone be determined by the audible and tangible signs appertaining to that condition.

5th. Among the latter, the active motions of the fœtus may be mistaken for movements depending upon disease. [And vice versâ, as in a case related by Mr. Horne, 'Lancet,' June 1845, in which the fœtal motions were simulated by tænia.]

6th. The beat of two hearts, the maternal and fœtal, which at once denotes pregnancy, is sometimes wanting, the latter is also not heard when the fœtus is inanimate.

7th, and lastly. The motion of *ballottement* is the best and most constant of all these signs, because it belongs only to pregnancy [Ed.?] exists when the fœtal pulsations are absent, and even when it is deprived of life.

2. *Extra-uterine Fœtation.*—The references† in the margin relate to four cases of extra-uterine conception which have been placed on record during the previous six months. All eventually proved fatal. The subject of the first case sunk under symptoms of peritoneal inflammation, which had continued for ten days. After death, in addition to the ordinary appearances of peritonitis, a coagulum of blood was found completely imbedding the uterus. Upon searching for the cause of the hemorrhage, a rupture was discovered in the right fallopian tube, which had bulged out to the size of a walnut. The uterus contained a well formed deciduous membrane.

In the second case, which came under the notice of Dr. Blackman, of Newburgh, U.S., the female presented herself for the removal of a foreign body

* Practical Lectures on Midwifery. American Translation, reviewed in Med.-Chirurg. Review, Oct. 1845. † Bibliothek für Læger, No. 1, 1845. American Journal of Medical Sciences, July 1845. Guy's Hospital Reports, Oct. 1845.

from the rectum. Her history gave evidence to her having been pregnant, and having experienced labour-pains at the full term, which however speedily subsided. The body which protruded from the anus proved to be a fœtal tibia. As the woman was fast sinking from marasmus, and the presence of a tumour in the abdomen taken in connexion with the history so clearly indicated extra-uterine pregnancy, gastrotomy was resorted to as a last hope. The patient however died before the operation could be completed. After death a full-born fœtus was discovered in the peritoneal cavity, together with a perforation in the sigmoid flexure in the colon through which the leg had passed.

The third and fourth cases to which we refer are reported by Dr. Oldham. The first of these proved fatal by rupture and hemorrhage into the peritoneum. The second was an instance of interstitial uterine pregnancy, and one, therefore, of great rarity, as Breschet, who has been at the pains of collecting these cases, has only been able to report four. Dr. Oldham concludes his paper by expounding his views of the causation of the malposition of the ovum. He considers that this untoward event most commonly depends upon the existence of false membranes, the production of partial inflammation, which, either by girding the fallopian tube itself, or by fixing it in a false position, form a more or less complete obstruction in its caliber, so that although the grasp of the fimbricated extremity may be perfect, the ovum is necessarily intercepted in its passage to the uterus. The difficulties which occasionally offer themselves to the formation of a correct diagnosis in cases of extra-uterine fœtation are lucidly displayed in a paper by Jobert de Lamballe, detailing an unusually obscure example of the accident, which had previously been regarded as ovarian dropsy. M. Jobert and M. Dubois, who were consulted on the occasion, both lay great stress upon the supression of the menstrual discharge as the chief diagnostic sign between the two affections; M. Dubois stating that he had never met with an instance of ovarian cyst in which it was absent.*

[This will evidently strike the reader as much too sweeping an assertion, since, in the latter stage of ovarian dropsy, as in other diseases which gradually undermine the vital powers, the menstrual secretion must be expected to subside. We cannot conceive any great difficulty in establishing the fact of extra-uterine conception, if the early history of the case can be clearly ascertained; without this assistance the case is materially altered.]

3. *Occlusion of the vagina and os uteri.*—Two cases of complete occlusion of the vagina during pregnancy have lately been published. The first† case, which occurred in the Maternité of Paris, had originated in a laceration of the parts during childhood, but impregnation had taken place through a small opening which scarcely admitted the female catheter. No interference with the case was attempted until labour had commenced, when a crucial incision was made as soon as the head was felt pressing upon the perineum. M. Danyau, who performed the operation, was enabled to obtain a perfectly formed vagina.

The second case, which occurred in the practice of Dr. Devizac,‡ of New Orleans, was in every respect similar to the above, with the exception that the occlusion was the consequence of a previous severe labour.

A case of obliterated os uteri, by which labour was completed by a crucial incision of the cervix, is to be found in the 'Encyclographie Médicale,' of August 1845.

* Ency. des Science Méd. Août. 1845. † Gaz. Méd. No. 29.

‡ New Orleans Med. Journal, and Philadelphia Med. Examiner, April 1845.

4. *Labour and its complications.—Induction of premature delivery.*—The subject of premature delivery is considered at great length by M. Lacour. The first part of the essay, which is occupied with an inquiry into the moral bearings of the question, need not detain us, as it is well known that many of the opinions entertained by French writers upon the point will find little favour with British practitioners. The second portion being purely historical may likewise be passed over without comment. In the third part of the essay the author examines into the circumstances which render premature delivery necessary, and amongst others considers that of deformed pelvis. In reference to this point he decides that this complication always requires the performance of premature delivery when the antero-posterior diameter of the pelvis is $2\frac{1}{2}$ inches. Among other matter contained in the essay of M. Lacour, we may mention a table, by means of which we may determine the precise period at which premature delivery should be induced; according to the degree of pelvic distortion. When the diameter is 2 inches 7 lines, it should be at the twenty-seventh week; when 2 inches 8 lines, at the thirtieth; when 2 inches 9 lines, at the thirty-first; when 2 inches 10 lines, at the thirty-fifth; when 2 inches 11 lines, at the thirty-sixth; when 3 inches, at the thirty-seventh. [The table, which will doubtless strike the reader as arbitrary, has not even the credit of originality, as it is a precise imitation of that given by Ritzen.*]

5. *Abortion.*—M. Pettijean† affirms that he has so frequently seen abortion produced during the exhibition of quinine in intermittent fever, that he has at length ceased to attempt the cure of that disease in pregnant women. In the prevention of miscarriage in women predisposed to the accident, Dr. Meigs strongly recommends the injection every night of a small quantity of fluid, containing forty drops of laudanum into the rectum.‡ Dr. Radford concludes a paper upon the treatment of threatened abortion, by the following practical hints:—"The first duty," he observes, "in the treatment of abortion, is to make a careful vaginal examination to ascertain the state of the cervix uteri. If its figure, size, thickness, and length, be normal, it is the duty of the obstetrician to adopt means to preserve the ovum, and to subdue the attendant symptoms; on the contrary, if we find the cervix uteri is shortened, partially or entirely distended, so that the figure of the uterus is changed, and is beginning to assume, or has assumed, the oviform state, the abortive process should be encouraged by every means in our power, having, at the same time, a due regard to those contingent circumstances which are attended with danger."§

6. *Anormal presentation.*—A case of head and foot presentation, which was remarkable for the several serious lesions which it presented, is reported by Dr. Doherty.‖ The author after reviewing the treatment which is commonly recommended in similar rare cases, thus states his own opinion. The practice, he observes, to be adopted is to be determined by ascertaining which organ is most prominent; if the foot be more advanced Denman's advice to grasp and bring it down is the best which can be followed; for if the part can be grasped, turning can in general be easily accomplished. If, however, the head be the more prominent presentation, it is better to keep back the foot so as to make the presentation a natural one. Sometimes, however, as the author remarks, the head and foot become firmly

* Vide Lectures on the Theory and Practice of Midwifery, by Dr. Lee, p. 271.
† Gaz. des Hôpitaux, No. 97. ‡ Provincial Med. and Surg. Journal, Sept. 17, 1845.
§ Translation of Colombat D'Isère on Diseases of Women, p. 593.
‖ Dublin Journal, July 1845.

jammed in the brim; when, as it is impossible to alter the position, it becomes a nice question how to act. Dr. Doherty recommends in the first place that an attempt should be made to bring down the foot, and if this fails, to use the long forceps if the child be alive; the perforator if it be dead.

7. *Procidentia uteri.*—A case is related in the 'Southern Medical Journal,' by Dr. Harden,* in which the entire uterus at the full term of gestation protruded through the os externum. The organ shewing no disposition to assume expulsive action, the labour was completed by evisceration and manual extraction. [Examples of this accident are not of common occurrence, there being but one or two on record. One will be found in Dr. West's Report on Midwifery, &c. (Brit. & For. Med. Rev. April 1844), and another in the 'American Journal of Medical Sciences,' vol. IX, extracted from a Dublin periodical. In both these cases the child was expelled by the natural efforts of the uterus.]

8. *Lacerations of the uterus.*—The 'Northern Journal of Medicine'† contains the report of a remarkable example of this accident, in which the leg of the fetus was driven through the cervix by the force of the uterine pains. It became a matter of debate whether the band of muscular fibres which intervened between the natural and artificial orifices should be divided, but the idea was abandoned from fear of hemorrhage. Fortunately an abatement of the uterine action soon ensued, when the accoucheur was enabled to pass the limb back through the neck, and to draw it down through the os uteri, and labour was then speedily completed.

A case of rupture of the body of the uterus occurs in the 'Gazette des Hôpitaux,' in which it is asserted that the fœtus being distinctly felt to move in the abdominal cavity, the accoucheur in attendance immediately passed his hand through the rent and extracted it by the feet. During this proceeding several loops of the intestine escaped into the vagina, but were replaced, and the woman did well. We cannot add that the above case is reported upon authority sufficiently high to take away from the prima facie incredibility of a fortunate result.

9. *Utero-vesical fistula.*—The note‡ at the foot of the page contains references to two cases of this rare and distressing accident, one of which is especially worthy of commemoration on account of the simple but injurious process which was adopted for its relief. The case we allude to occurred to Mr. Harrison, and will be found briefly reported in the Abstract (art. 82); as will there be seen, though a perfect cure was not established, the most complete relief to the symptoms was obtained by passing a skein of silk through the urethra into the bladder, and out of the vagina through the laceration. As inflammation was excited, thread by thread of the seton was withdrawn until at length the fistula was so far diminished that no urine was observed to pass. The second case, described by Mr. Reed, was cured by the repeated application of the lunar caustic.

10. *Vesico-vaginal fistula.*—For this see Report on Surgery (p. 251).

11. *Retained placenta.*—In a highly useful series of papers upon the mechanism of uterine action, Dr. Clay, of Manchester, calls the attention of the reader to certain peculiarities in the manner in which the opposite portions of the uterus contract, in order to point out the best method of inducing expulsion of the placenta when that event does not readily take

* Philadelphia Med. Examiner, June 1845. † Extracted by the Lancet, Oct. 4. ‡ Provincial Med. Journal, June 11; Lancet, Oct 11, 1845. § Med. Times.

place. He shows that the two classes of uterine fibres, the longitudinal and the transverse, are essentially different in their action, and are excited by different causes, the longitudinal only being expulsive, the transverse having a dilating action. The exciting cause of the former class of muscular fibres he states to be irritation by pressure of the upper part of the vagina, and he therefore advises that, in retained placenta, the closed fist should be introduced, and pressure be made in imitation of that caused by the child's head. He gives an instance in which hour-glass contraction, a condition which is produced by inordinate action of the transverse fibres was thus overcome and the placenta liberated. The occasional retention of the placenta from its partial implantation in the Fallopian tube is commented upon by Dr. Payan. (Vide infra, p. 290.)

12. *Uterine hemorrhage.*—Few subjects connected with obstetrical science have created a greater sensation than the proposal of Drs. Radford and Simpson to substitute extraction of the placenta before the child in certain cases of unavoidable hemorrhage for the old-established rule of turning. It was not to be expected that a proceeding of so novel a character, and one so opposed to ordinary notions of correct practice, would be allowed to pass without criticism, and we accordingly find that it has met with the opposition of several accoucheurs of eminence, among whom we may mention Drs. Lee, Ashwell, &c. Of these, Dr. Lee has taken the most prominent part, having originated a controversy with Dr. Simpson, the heads of which we shall endeavour to reproduce.

In the first paper, published in the 'Medical Gazette' of Sept. 19, and containing the details of eight successful cases of placenta prævia, Dr. Lee condemns the new practice in the strongest terms, not only as opposed to the principles derived from the anatomical relations of the uterus and placenta, and to the results of his own experience, but as not warranted even by the tables upon which Dr. Simpson has sought to establish the necessity for its adoption. This table Dr. Lee pronounces to be altogether fallacious, and adduces the evidence of Dr. Ramsbotham to show that Dr. Simpson has made the important error of mistaking the number of the infants lost for that of the mothers.

In reply to this communication, Dr. Simpson examines the objections of Dr. Lee seriatim.* To the first of these, namely, that Dr. Lee sees no necessity for departing from the established rule of practice, he objects that if the result of the eight cases detailed by Dr. Lee was the expression of the real average of maternal danger, he should be the last to propose an alteration, but in order to show that such is not the case, he takes 61 cases which occurred to Drs. Lee and Ramsbotham, in which turning was adopted. Of this number, 24 mothers, or 1 in $2\frac{1}{2}$, were lost, a mortality which, as he observes, is equal to that of the Cæsarean operation. In answer to the accusation of Dr. Lee that he (Dr. S.) advises extraction of the placenta in preference to turning in all cases indiscriminately, Dr. Simpson replies that such is not the fact, but that he recommends the practice only under the following circumstances: In severe cases of unavoidable hemorrhage complicated with a rigid and undilated os uteri, in which turning would be either impossible or hazardous; in most primiparæ; in unavoidable hemorrhage, with premature labour, and an undeveloped condition of the os and cervix; in placenta presentations with distorted pelvis; in cases where the extreme exhaustion of the patient forbids turning, and when the fœtus is ascertained to be dead, or is premature, and not viable. In support of these views of the necessity of

* Med. Gazette, infra.

the new proceeding, eleven cases are quoted from Dr. Lee's own practice,* in which unavoidable hemorrhage was complicated with rigid and undilated os uteri. Of these eleven, three mothers only survived, and of these, two very nearly perished. Dr. Lee's third objection to extraction of the placenta, that it was not adopted by the older accoucheurs is met by Dr. Simpson with the very obvious plea, that if any novel practice is to be condemned simply because it was not thought or approved of by the ancients, there would be at once an end to all improvement. Dr. Simpson also demonstrates the error of Dr. Lee in asserting that Portal, one of the old authors referred to, never attempted to detach the placenta in any case, by quoting that author's own words, in which the fact of his having abstracted the placenta before the child is unequivocably expressed. Dr. Lee's fourth objection is one which apparently carries great weight, being this—that by the new practice the child must inevitably be sacrificed. To this Dr. Simpson replies that, according to Dr. Lee's own showing, 65 per cent. of the infants perished under the operation of turning, in actual numbers 15 out of 23 in which the result is mentioned; while of 106 cases previously reported (Lond. and Edin. Monthly Journal, March 1845) in which the placenta was spontaneously expelled before the child, 31 per cent. were saved, so that in this respect there is too little difference in mortality, to found an objection upon. "Besides," says Dr. Simpson, "the cases in which extraction of the placenta is to be advised, are exactly those in which the fœtus may be expected to be lost under any mode of treatment."

In answer to Dr. Lee's objection upon the score of inaccuracy, Dr. Simpson refers the reader to a series of letters from Dr. Ramsbotham and Dr. Lee, which show that inaccuracies have crept into the statements of both parties, and that in this respect Dr. Lee is not less chargeable than his opponent.

The subsequent number of the same journal contains an additional paper by Dr. Lee, in which 89 cases by Dr. Merriman, and 19 by Giffard, are tabulated. In the former of these there is evidently a mistake; 59 mothers out of 78, in which turning was adopted, being represented as having perished; while Dr. Merriman expressly states that he lost only 19; the numbers should clearly be reversed, but even this would make a maternal mortality of 1 in 4, not much short of that asserted by Dr. Simpson. In the 19 cases related by Giffard 5 died, also about 1 in 4, but these, Dr. Lee observes, perished from loss of blood prior to turning, and not in consequence of that operation.

It must be obvious from the above imperfect abstract of this important controversy, that neither party is exactly in a condition to establish his position; statistical data, of *undoubted* accuracy, being absolutely necessary for so doing. Looking, therefore, upon the question as one still undecided, we shall proceed to mention the opinions of other writers as to its feasibility, and to record the individual experience of those who have adopted the practice of Dr. Simpson.

Dr. Ashwell* expresses his doubt of the correctness of Dr. Simpson's assertion, that the maternal deaths under the operation of turning in unavoidable hemorrhage are as high as 1 in 3. He states that in his own practice, he has lost only 2 out of 20; and that in the practice of the lying-in charity of Guy's Hospital, 2 cases in 14 only proved fatal. This writer also questions the fact upon which, as we have before said, Dr.

* Med. Gaz. Nov. 7.

Simpson bases the propriety of his operation, viz., that the blood in hemorrhage from placenta presentation comes from the detached placenta. He shows satisfactorily that Dr. Lee is correct in denying the possibility of such an occurrence, as, in the first place, the decidual vessels are too small to allow of the terrific gushes of blood which are witnessed in this form of hemorrhage, and, moreover, that in consequence of the cellular structure of the placenta, its meshes become almost necessarily plugged by coagulated blood. As regards the new practice, Dr. Ashwell observes that it rarely requires to be employed, and never can be without risk to the mother and certain death to the child. He thinks that in all cases in which the placenta could be safely removed, a little patience would also accomplish sufficient dilatation of the os uteri to admit of turning.

An opinion similar to the above is also expressed by Mr. Crowfoot,* who has been fortunate enough not to lose a single patient in 11 cases of turning under unavoidable hemorrhage. Of the infants 4 perished. In 2 other cases, however, in which, from the quantity of blood lost, the fœtuses were evidently dead, Mr. Crowfoot admits that he should have advised extraction of the placenta had he been aware of its effect upon the hemorrhage. Mr. Newnham,† of Farnham, likewise offers a somewhat qualified opposition to the practice, thinking it advisable in some cases where it may be necessary to diminish the size of the head in consequence of deformed pelvis; objecting to it as a general rule. [It must, however, be remembered that neither Dr. Simpson nor Dr. Radford contend for its general operation.]

The periodical press during the last six months contains several cases in which the new practice has been successfully adopted as regards the mother. The principal of these, to which the references will be found below,‡ are as follows: Two cases by Messrs. Wilkinson and Tennent; one by Mr. Greenhow; one by Mr. Jones, of Llanfair; one by Mr. Parker, of Bridgewater; one by Mr. Walker, of Chesterfield, (in this case hemorrhage ceased as soon as the placenta was removed, but turning was subsequently necessary; two cases by Mr. Favell, of Sheffield, in which the placenta was spontaneously expelled without hemorrhage; one by Dr. Maclean; one by Mr. Hutchinson; one by Mr. Hickings, in which he believes that the earlier abstraction of the placenta would have prevented the alarming hemorrhage which had occurred; and, lastly, one by Mr. Wells.

The subject of accidental uterine hemorrhage has been brought before the profession by Mr. Adams, of Banchory. The views of the writer as to the source of its hemorrhage are greatly at variance with generally received opinions, as will be seen from the following conclusions:§

"1. That the doctrine generally taught, namely, that in floodings after delivery the blood escapes by exudation from the placental vessels of the uterus, is founded on a mistaken hypothesis regarding the construction of the placenta; while the symptoms of the case which were supposed to uphold the doctrine of uterine torpor, that is to say, the flaccidity of the womb when felt externally, and its distension and relaxation as discovered by the introduction of the hand, are to be regarded as the effects, and not the causes, of the flow of blood.

"2. That all the phenomena of the case are satisfactorily accounted for upon the supposition that the hemorrhage proceeds from lesions which

* Prov. Med. Journal, Nov. 12. † Med. Gaz. Nov. 14. ‡ Prov. Med. Jour. July 13; Ib. Sept. 3; Ib. Sept. 10; Ib. Sept. 17; Ib. Sept. 24; Med. Times, Oct. 4; Northern Journal of Medicine, and Med. Times; Prov. Med. Journal, Oct. 15; Med. Gaz. Sept. 26; Lancet, Nov. 8. § Med. Gaz. Aug. 29, 1845.

are proved to be of no uncommon occurrence, about the uterus and perineum after delivery, but that analogy would lead to the conclusion that they sometimes proceed simply from violent action of the uterine exhalents.

"3. That there is no reason from analogy to suppose that blood would flow from an organ or member, merely because it is in a relaxed state, provided it had sustained no solution of continuity.

"4. That it has been demonstrably proved that contraction of the uterus is no safeguard against flooding, and that flooding is not necessarily the consequence of non-contraction after delivery.

"5. That the facts and circumstances connected with the Cæsarean operation, and the removal of the placenta in inertia of the womb, militate strongly against the established opinion, that flooding is apt to arise from the non-contraction, or sudden emptying, of the womb.

"6. That, beyond all dispute, instrumental and precipitate deliveries are those in which floodings are of the most frequent occurrence; and it is well ascertained that lacerations are common in both these cases.

"7. That the introduction of the hand into the uterus, with the intention of stimulating the organ, or of compressing the bleeding point, is a practice highly dangerous, tending to produce increased determination of blood to the part, syncope, and convulsions; and that the only circumstance which could justify the most gentle modification of this practice is the existence of a coagulum in the vagina or womb.

"8. That, agreeably to my own experience, laying the head low, exposing the patient to a current of cool air, applying cold cloths to the parts, with small doses of opium and gentle compression of the abdomen, are means which will rarely fail to arrest the flow of blood; but that in extreme cases it may be warrantable to try to ascertain the situation of the bleeding point, and secure it by surgical means.

"9. That, as far as can be ascertained, fatal results under this mild system of treatment in former ages were of much more unfrequent occurrence than they have been under the harsh mode of treatment pursued for some time past.

"Finally, that the flooding which follows delivery has none of the characters of a passive hemorrhage, as has been generally taught of late, but is to be referred to the class of active hemorrhages, and treated upon the principles applicable to them."

[We transcribe the above remarks because it is our duty to record the opinions which may be put forth during each semestrial period, not because we consider them as worthy of confidence. It appears to us, on the contrary, that the smallest experience in flooding after delivery must be sufficient to prove their fallacy. Dr. Ramsbotham and Mr. Copeman* have both signified their dissent from them.]

The occasional dependence of uterine hemorrhage upon partial development of the placenta within the fallopian tube, is demonstrated by Dr. Payan,† who relates two cases in point, one of which proved fatal. In this instance, a prolongation of the placenta was found to have occupied an inch and a half of the tube, which had undergone a funnel-shaped dilatation to the extent of $3\frac{1}{2}$ inches in circumference. It would appear from M. Payan's observations, that the development of the placenta in this situation, excepting in cases of extra-uterine pregnancy, has not met with much attention, Riècke and D'Outrepont being the only writers who have noticed it. Both of these authors consider the circumstance to be a not

* Med. Gaz. Nov. 7. † Edin. Month. Journal, Nov. 1845.

unfrequent cause of abortion in the early months of gestation, and that it occasionally produces that retention of the placenta which is generally attributed to irregular contraction of the uterine fibres. As the attention of the practitioner is not likely to be drawn to the existence of this form of abnormal implantation of the placenta, it generally remains undetected until labour is completed. It may, however, be suspected, observes M. Payan, if after the uterus has contracted, and a portion of the after-birth has been expelled, a soft tumour be discovered in the region of the uterine insertion of the fallopian tubes. The development of the placenta in this situation is considered by the author to be more common than is generally suspected, as in slight attachment the tubal portion may be readily expelled into the uterine cavity, and thus escape detection.

In the treatment of uterine hemorrhage, Mr. Cleveland* has successfully applied galvanism as recommended by Drs. Hæniger and Jacoby,† and Dr. Radford. Mr. Higginbottom‡ and Mr. Blacklock§ have seen considerable advantage from ipecacuanha and mustard in emetic doses. Dr. Eber's essay on the powers of ergotin, to which we alluded in our last Report, is in the course of translation in the 'Medical Gazette.'‖

13. *Operative midwifery.*—Cæsarean section. Two successful cases of this operation have recently occurred: the first will be found described in the 'Revue Médicale;' the second, in which both mother and child recovered, appears in the 'Gazette Médicale' of Sept. 13. An unsuccessful case, in which the abdomen was laid open for the extraction of the fœtus after rupture of the uterus, has already been mentioned. (89.)

14. *New obstetrical instrument.*—An instrument, called a *crochet-scie*, has been invented by a M. Van Eeeken, for the purpose of decollation or dismemberment of the fœtus in cases of narrow pelvis. In form it resembles the ordinary crotchet, with the exception that a second limb is made to unite with the extremity of the curve after it has been applied; both stems are hollow, and allow of the play of a chain-saw, the teeth of which project from the under surface of the curved portion of the instrument. The saw is worked by alternate traction exerted at the base of each handle. For a more minute description of the instrument and its uses we refer the reader to the 'Encyclographie des Sciences Médicales' for August, where he will be assisted in comprehending its mechanism by a series of drawings.

15. *The puerperal state. Convulsions.*—In a memoir recently presented to the Société de Médecine d'Anvers,¶ M. Leva endeavours to separate true puerperal eclampsia from other convulsive affections, as epilepsy, &c., which may occur during pregnancy or labour. The symptom which he considers to be strictly diagnostic of the puerperal convulsion is the persistence of coma between the intervals of convulsion; if the patient either does not entirely lose her consciousness during the fit, or recovers it in the intervals, the author does not regard her as labouring under true puerperal eclampsia. The proximate cause of the disease M. Leva considers to be that condition of blood said to exist in pregnancy in which the fibrine is more abundant than natural. This, he observes, tends to the production of cerebral congestion. In the treatment of the paroxysm he is strenuously opposed to artificial delivery, and places but little confidence in bloodletting; his chief reliance is upon mercury, which he exhibits upon the grounds that it liquefies the blood, and diminishes the proportion of fibrin.

* Med. Gaz. June 27, 1845. † Neue Zeit. f. Geburtsk., bd. xvi, heft 3, in Dr. West's Report, British and Foreign Med. Review, Oct. 1845. ‡ Lancet une 20. § Ib. July 5, 1845. ‖ Nov. 14 et seq. ¶ Gaz. Méd. No. 20, 1845.

[We may be allowed to remark, in respect both to the cause and treatment of the disease as here stated, that the author's theory is not supported by fact. In the first place MM. Andral and Gavarret give only 4 and a fraction as the quantity of fibrin in pregnancy; Becquerel and Rodier, 3 to 4; while in rheumatism and other phlegmasiæ, the proportion rises as high as 6, 8, and 10, without giving rise to convulsive symptoms. Again, as regards the effect of mercury upon the proportion of fibrin, so far from being diminished by it, Andral found it increased during salivation, being in one case 4, and in others 6.]

16. *Puerperal fever.*—A full account of an epidemic of this disease, which has recently appeared in several of the Parisian hospitals, has been furnished by MM. Bîdault and Arnould.* The symptoms generally declared themselves on the third or fourth day, commencing in every case with rigors, followed by heat of skin, and a pulse ranging from 110 to 120, and of variable strength. The other ordinary symptoms were headache, injection of the eyes, loaded tongue, laborious breathing, pain in the abdominal region, bilious vomiting, and diarrhœa, or obstinate constipation. The lochia were in all cases diminished or suspended, as was likewise the secretion of milk. Under the influence of bloodletting, which was in some cases adopted at the Hôtel-Dieu-Annexe, all the symptoms of reaction subsided, the features became pale and contracted, the eyes sunk, the lips became livid, and the most extreme feeling of anxiety supervened. The abdominal pains were diminished, but the abdomen became so tympanitic as to add considerably to the difficulty of breathing. Death usually occurred before the fifth or sixth day, with every symptom of low typhus. In some cases bronchitis formed a serious complication; in others papular spots, similar to those observed in typhoid fever, made their appearance. The post-mortem appearances were as follows:—The uterus was flaccid and voluminous, and lined with fetid and sanious false membranes; the muscular tissues and the veins were unaffected, but the lymphatics were distinctly seen to be filled with pus; in some cases the diseased lymphatics were confined to the uterus; but in others, those of the appendages were involved. At the Hôtel-Dieu and the Hôtel-Dieu-Annexe, where symptoms of peritoneal inflammation predominated, alterations of that membrane were found correspondingly frequent. The peritoneal cavity contained a purulent serosity, in which fibrinous flocculi were seen floating. At the Hôpital St. Louis, where the typhoid symptoms were most developed, the peritoneal membrane was unaltered; but there was extensive purulent infiltration of the pelvic cellular tissues. The liver was healthy in all cases, as was likewise the spleen. The lungs exhibited no alterations beyond the hypostatic congestions common to low fevers. There were no purulent deposits; but pus was sometimes found in the pleural cavities. The blood exhibited the dark semi-coagulated appearance seen in typhoid fever. There was no particular lesion of the nervous system.

No appreciable cause for the outbreak of this epidemic could be discovered, either in the state of the atmosphere or other surrounding circumstances. The epidemics, however, all occurred in the cold months. The disease did not, appear to originate in over-crowding of the patients, as at St. Louis the number was less than usual. It is nevertheless worthy of notice, that of 67 women delivered in the obstetrical ward of the Hôtel-Dieu-Annexe, 1 in 5 died; but of 21 distributed promiscuously among the female wards, a single case only was lost. This fact, as the reporters justly acknowledge, is an evidence of the

* Gaz. Méd. No. 31, and Encyclographie des Sciences Méd. Août 1845.

impropriety of accumulating patients labouring under this and similar diseases. The disease was thought to be contagious; but no mention is made of the consentaneous appearance of crysipelas. The patients attacked were generally those of feeble constitution, and unable to nurse their infants.

The treatment adopted in these epidemics was for the most part unsuccessful. General bleeding was invariably prejudicial; local bleeding, though not productive of injurious effects, appeared of little use. The author speaks favorably of repeated warm injections, per vaginam, for the purpose of removing the sanious discharges. The patients, two in number, saved by M. Tessier at the Hôtel-Dieu, were treated by leeches and fomentations, followed by mercurial frictions, and the internal exhibition of the tincture of aconite.

Some epidemics, of a similar character, which occurred at Rennes in the years 1842 and 1844, are described by M. Botrel.* As in the disease above mentioned, the lymphatics were chiefly implicated, for which reason the author called the affection an *angio-eucite puerpérale;* the veins were not in any case involved. These epidemics, however, differed from the former in the frequent occurrence of purulent deposits in the lungs; the author believed the disease to depend upon atmospheric causes; but refuses to admit the influence of defective ventilation. The disease terminated with typhoid symptoms, in some cases in forty hours, but generally not before the fifth day. The mortality in the first epidemic was 20 in 24; in the second, 20 in 22. In the cases which recovered, local and general bleeding, purgatives, and mercurials were employed. M. Botrel distinctly states that general bleeding was only admissible in the very onset of the disease. Turpentine was found to be positively injurious.

In his description of an epidemic puerperal fever, which prevailed at Buffalo, New York, Dr. Flint† maintains the following two prominent propositions:—1, that the disease is an essential fever, and not a merely modified form of peritonitis or metritis; and, 2, that it is a fever having a close analogy with that of erysipelas. In corroboration of the latter, at the present time somewhat prevalent opinion, the author narrates the following case. Two ladies were in incessant attendance upon a friend who died of puerperal fever. In the course of three days they were both taken ill, one with severe erysipelas, the other with premonitory symptoms of the same disease, and which were fortunately dissipated by the action of an emetic. A labouring woman, who was employed to wash the clothes of the same patient, having received a slight scratch on the hand while so doing, was attacked with erysipelatous inflammation of the absorbents, and died after a short illness. The latter case is strongly confirmatory of the axioms laid down by Mr. Storrs, and mentioned in our last Report, (Vol. I, p. 238).

M. Colombat d'Isère‡ speaks of puerperal fever under two forms, that of puerperal peritonitis and uterine phlebitis; but his accounts of both are very short and imperfect. In the treatment of both forms he, as well as his translator and commentator, Dr. Meigs, lays greater stress upon the inflammatory origin than would be thought prudent in this country, and general and local bloodletting are consequently employed with a boldness which the British practitioner would justly condemn.

17. *Puerperal ophthalmia.*—The recently published volume of the 'Trans-

* Revue Méd. and Archives Gén. Juin 1845. † New York Journal of Medicine, in Med. Times, Nov. 22, 1845. ‡ Treatise on Diseases and Special Hygiène of Females, translated by Dr. Meigs, p. 660.

actions of the Medico-Chirurgical Society,'* contains a paper by Dr. Robert Lee, in which the connexion of the inflammation of the eyes in childbed women, with phlebitis of the uterine veins, is clearly traced. It is obviously, as the author observes, to be placed in the same category of diseases, as the pneumonic abscesses, purulent effusions into the joints and other parts, observed to coincide with the more fatal forms of puerperal fever.

18. *Melancholia puerperalis attonita.*—Under this somewhat fanciful title, two cases have been described, one by Dr. Lion,† the second by Mr. Image.‡ The affection appears to be nothing more than the effects of severe mental shock upon the nervous system, at that time in an unusually susceptible condition. In the first case the exciting cause was excessive horror, occasioned by the mother overlaying her infant; in the second, the symptoms were occasioned by the sudden news of the husband's bankruptcy. The symptoms in both cases were an expression of blank despair, conjoined with great and increasing prostration of strength, the consciousness remaining intact. Both cases proved fatal within 48 hours of the accession of the symptoms.

19. *Excoriation of the nipples.*—The common opinion that this painful state of the breast arises from the violence sustained by the part in the act of suckling, is denied by Dr. Rossi,§ who has paid great attention to the subject. This author has found that, even in cases of retracted nipple, where unusual violence has been exerted, that the painful excoriation never appeared except in connexion with the presence of aphthous ulceration in the infant's mouth. That this is the real cause of the affection he has proved by the application of children labouring under aphthæ to healthy nurses, when fissures of the nipple have been the consequence. It follows from these views, that the cure of the complaint depends as much or more upon attention to the state of the infant, as to that of the mother. He recommends, therefore, alterative medicine to the infant, conjoined with slightly astringent washes to the mouth. Precaution should also be taken to wash the bosom carefully after each suckling.

20. *Puerperal osteophyte.*—In our last Report (vol. I, p. 242), we alluded to the researches of M. Ducrest upon the remarkable bony growth which is found to line the internal table of the cranial bones in women dying in the puerperal state. With the object of continuing these researches, M. Moreau‖ has examined the heads of 98 women who died in childbed at the Maternité. Of this number the osseous concretion alluded to was found under different degrees of development, in 4 out of 42. It appears that the phenomenon is confined to the cranium, as this observer failed to detect it in the pelvis or other flat bones. The appearance was found to present itself in three different degrees: in the first, the internal table of the skull exhibited scattered spots of a darker colour than usual, and allowing of being readily scraped off with the nail. In the second degree these spots were more extended, and contained numerous small ossific points, and adhere to the subjacent bone, but not to the dura mater. The third degree consists merely in the coalescence of the spots, so as to form an ossific lamina of greater or less extent. M. Moreau throws no light upon the pathology of this curious appearance.

21. *Statistics of midwifery.*¶—"These statistics are founded on 5·547

* Vol. x, Second Series. † Casper's Wochenschrift, 144. ‡ Med. Gaz. June 1845. § Annali Universali, in Gaz. Med. Sept. 20, 1845. ‖ Bulletin de la Société Anatomique. Encyclographie Méd. 1845. ¶ Northern Journal of Medicine, June; and Lancet, July 5, 1845.

deliveries, occurring in the private practice of Professor Campbell. The oldest parent among the males was 77 years of age. There were in all but 5 male parents below the age of 20; 4 at 18 and 1 at 19. Among the mothers 2 were delivered at the age of 50; 3 at 47; 9 at 46; 15 at 45; 20 at 44; 21 at 43; 37 at 42; 28 at 41; 124 at 40; 153 at 19; 87 at 18; 35 at 17; 7 at 16, and 2 at 15. Of the whole number of female parents referred to, each of 31 mothers produced 12 children, 14—13, 5—14, 1—15, and 3—16 children.

"In 5754 deliveries, 2901 were male children, and 2219 female; the sex of the remainder was not recorded.

"There were 400 first deliveries (244 of males and 160 of females), including three twin births.

"In 116 illegitimate births there were 65 male and 52 female births.

"By 153 males and females of equal ages, 318 male, and 245 female children were procreated.

"By 340 fathers, from 3 to 6 years older than their wives, 795 males, and 351 females, were produced.

"By 143 fathers, from 7 to 10 years older than their wives, 366 males, and 289 females, were produced.

"To 112 fathers, from 11 to 36 years older than their wives, 267 males, and 194 female children, were born.

"To 117 husbands, from 3 to 17 years younger than their wives, 285 males, and 214 females, were born.

"In 1310 labours, extending over a period of four and a half years, the head presented in 1244 births, (face to right ileum in 977 cases, to the left in 263)."

§ II.—*Diseases of Women unconnected with Pregnancy.*

22. *Inflammation of the os and cervix uteri. Leucorrhœa.*—The valuable lectures of Dr. Henry Bennet, of London, which we had occasion to mention in our last Report, have since been laid before the public in a separate form,* and cannot be too strongly recommended as a practical guide to the treatment of this important class of female ailments. The assertion of the author therein contained, that a persistent leucorrhœa in adult females, who have been exposed to sexual intercourse, is in the great majority of cases dependent upon an inflamed and engorged, if not ulcerated condition of the neck of the womb, has recently been confirmed by the observations of Dr. Roberts.† Fifty-nine cases were adduced by this author, in all of which the leucorrhœal flux was symptomatic of some form of inflammatory lesion of the os and cervix uteri. In forty-six of these cases those parts were either swelled, red, livid, or granular; in two or three only did the membrane exhibit its natural colour. In thirty-three cases ulceration existed, and in forty the discharge was seen to issue from the os tincæ. Dr. Roberts denies that leucorrhœa ever depends upon simple atony of the vaginal membrane, or that the discharge alone is the cause of the debility which so often attends it. He agrees with Dr. Bennet, that the use of the speculum is absolutely necessary for the cure of many of these distressing cases.

M. Gibert,‡ one of the physicians to the hospital of St. Louis, has

* Practical Treatise on Inflammation and Ulceration of the Neck of the Uterus.
† New York Journ. of Med., and Lancet, Oct. 22. ‡ Gaz. Méd. Mai 1845.

introduced a new form of astringent vaginal injection for the cure of leucorrhœal discharges, to which he has given the name of the "Alcoholic extract of tannin." M. Devay* treats the complaint by repeated applications of the solid nitrate of silver. His method consists in passing the caustic, with the aid of the speculum, lightly over the whole extent of the mucous membrane, from the cervix to the os externum, repeating the operation every four or five days. This proceeding is identical with the practice of M. Ricord, and was long since recommended by Dr. Jewel. (Vide *Encyclopæd. Pract. Med. art. Leucorrhœa.*)

23. *Retroversion of the uterus.*—A case is recorded by Mr. Mann,† in which the displacement of the unimpregnated uterus was apparently caused by a distended state of the colon, and obstinately resisted all attempts at reduction, until the lower bowels were emptied by means of Dr. O'Beirne's enema tube, after which the organ spontaneously recovered its position. [The agency of distended and superposed intestines in producing this accident is distinctly acknowledged by M. Lacroix. (Vide Abstract, vol. I, p. 153.)]

Dr. Rigby‡ in a report upon this displacement states his belief that it occurs more frequently in the unimpregnated womb than is generally suspected, existing frequently in slight degrees without giving rise to any very distinctive symptoms. He speaks highly of the uterine sound of Dr. Simpson as a means of discovering the displacement, as well as the uterine supporter invented by the same gentleman.

24. *Inversio uteri.*—The last volume of the 'Transactions of the Provincial Medical and Surgical Association'§ contains the first part of a most comprehensive and learned essay upon this displacement, by Mr. Crosse of Norwich. The different degrees to which the accident may proceed are described under the four terms of depression, introversion, perversion, and total inversion. The first, or lowest degree, consists in the simple depression of the fundus, after the resemblance of the bottom of a bottle; introversion of a more extensive falling in of the fundus, but short of protrusion from the os uteri. The term perversion is intended to express the escape of the fundus from the os, without inversion of the cervix, and total inversion implies the inversion of the cervix as well as the rest of the organ. Inversion of the womb is considered both as it occurs after parturition, and in conjunction with polypus, and under each department is illustrated by diagrams and plates which materially enhance the value of the communication.

Dr. Meigs|| states he has met with positive evidence to show that the inverted uterus may in some rare instances become spontaneously restored to its natural state; two cases are given which, if the diagnosis was correct, render the supposition indubitable, as in each instance a subsequent pregnancy took place.

A case of successful extirpation of the inverted uterus by incision, is recorded in the 'Journal de Médecine de Montpellier,' Juin.¶

25. *Urethral polypus.*—The growth of polypi from the mucous surfaces of the female urethra forms the subject of a thesis by M. Bavoux.** They are divided by the author into external and internal. The external polypus, which is by far the most common, generally springs from the posterior wall of the canal, close to the meatus urinarius, from which it eventually makes

* Gaz. Méd. No. 26, and Encyclograp. Méd. Juillet 1845. † Lancet, Oct. 22. ‡ Med. Times, Nov. 8, 1845. § Vol. i, New Series. || Note to Translation to Colombat, p. 183. ¶ Gaz. Méd. Oct. 18, 1845. ** Reviewed in Archives Gén. Sept. 1845.

its exit. The size of these growths varies from that of a pea to that of a cherry; their colour is of a vivid red, and they sometimes bleed upon the slightest touch. The author states that they give rise to no pain in some cases, in others they excite violent pain in passing the urine, and in the sexual act. The internal polypus originates in the same manner, and is often unsuspected until it presents itself externally. In the treatment of these polypi the author places no confidence in topical astringents, the only certain cure is extirpation with the knife or ligature.

26. *Uterine polypus.*—M. Lisfranc* advises the application of the "acid nitrate of mercury" as a caustic for the suppression of hemorrhage in cases where neither excision nor ligature can be employed. M. Lenoir and M. Malgaigne,† both relate cases in which a vaginal examination in this disease was followed by fatal peritonitis.

§ III.—*Diseases of Children.*

27. *Asphyxia neonatorum.*—The causes of infantile asphyxia are stated by Dr. Clay,‡ of Manchester, to be as follows: pressure on the cord during parturition; pressure on the head; plugging of the respiratory passages by mucus; too early division of the cord; constitutional debility; and lastly, ergot of rye given *in substance;* the infusion, he observes, has not the same deleterious effect. The subject of artificial respiration in infantile asphyxia is considered at length by M. Depaul,§ but this article contains little worthy of mention. The precautions which he recommends in performing the operation are judicious, but are such as would be adopted by every careful practitioner. He denies that there is any risk of producing emphysema of the lungs, unless more than usual force is given to the insufflation of air.

28. *Œdema neonatorum.*—This disease has recently been investigated by M. Roger‖ in reference to the condition of the temperature of the body. The result of his inquiries seems to be that there is no disease in which animal heat is so uniformly and steadily diminished as the one in question, and thus the diminution is in strict correspondence with its severity. He gives a table consisting of twenty-nine observations, which may be thus recapitulated:

In every instance, without exception, the thermometer placed in the axilla indicated a temperature lower than the normal mean standard in infants of the same age (37°·08 cent.) In nineteen cases it descended to 33°, in seven to 29°. No circumstances appeared to exercise any control over the refrigeration of the body, it progressed with the disease in spite of means the most likely to oppose it. Such, indeed, is the constancy of the phenomenon, that M. Roger regards it as a certain means of prognosis. If the thermometer falls from day to day, the disease, according to his experience, assuredly proves fatal; if it ascends a degree or two it affords grounds for hope. The author does not attempt to explain the connexion between the low temperature of the body and the serous infiltration of the cellular tissue. In reference to treatment he calls attention to M. Chossat's brutal experiments on the effect of starvation upon animals, and deduces from them, the conclusion that nutritious food would have more effect in restoring the temperature of the body than any external applications.

* Gaz. des Hôpitaux, Mai 1845. † Ib. in Lancet, July 26, 1845. ‡ Med. Times, Aug. 16, 1845. § Journal de Chirurgie de M. Malgaigne, Juin 1845. ‖ Archives Générales, Mai 1845.

29. *Cephalhæmatoma.*—Observations upon this somewhat rare infantile disease are furnished by Dr. West,* and Messrs. Kesteven, Rose, and Audland.† Dr. West's case was one both of external and internal cephalhæmatoma, and is chiefly remarkable from the fact that a process of reparation having commenced internally, similar to that which is observed on the external table of the skull, and which, as in Mr. Kesteven's case, often gives rise to the groundless fear that a deficiency in the cranial bones exists ; the infant died (at the end of three weeks) from convulsions. In the second case alluded to, the tumour was unusually extensive, and appeared the day after the infant's birth. It remained stationary for six weeks, when absorption commenced, and three or four days sufficed for its entire removal. Mr. Rose's case was in every respect similar to that related by Mr. Kesteven, and was likewise spontaneously cured. Mr. Audland describes two cases, which in situation and symptoms resembled the above; one was punctured under the idea that it was an encysted tumour containing serous fluid. It was then, as was the other case, treated by evaporating lotions, and both speedily recovered.

The usual termination of internal cephalhæmatoma is fatal. Of eight cases, the details of which have been collected by Dr. West, two were still-born; one died on the fifth day, two on the ninth, and two on the twenty-first ; in one the date of death is not mentioned.

30. *Cranio-malacia.*—The peculiar softening of the occipital bone, which was described under this name a few years since by Dr. Ellsaesser, has been subsequently noticed by Dr. Widtmann.‡‖ This writer agrees with its first observer in considering the affection as a form of rachitis, and gives the following description of the symptoms: The child is at first remarked to be restless and uneasy, rubbing its head continually against the pillow. After an interval of longer or shorter duration, tetanic rigidity of the muscles ensues, together with spasmodic dyspnœa, resembling laryngismus stridulus. The disease generally occurs between the age of three and six months, and is most effectively treated by chalybeates and nutritious diet. Dr. Widtmann relates nine cases of laryngismus stridulus, in all of which this peculiar condition of the occipital bone was observed.

31. *Pathological conditions of the milk a cause of infantile disease.*—A correspondent of the 'Medical Gazette' invites attention to this too much neglected subject, adducing the experiments of M. Donnè in regard to the microscopic characters of good and bad milk. Several cases are detailed which occurred to M. Girard, in which a wasting diarrhœa with aphthæ was entirely owing to a diseased condition of the milk, and resisted all treatment until a healthy nurse was obtained.

32. *Pertussis.*—In the treatment of this disease, the endermic use of morphine is strongly recommended by M. Berndt ;§ an infusion of the leaves and flowers of the potato by M. Reichnelt ;‖ and the vapour of tar by Mr. Waddington.¶ M. Berger,** of Berlin, considers the employment of moderate antiphlogistics always necessary in the first instance, and afterwards relies upon ipecacuanha or tartar emetic, evidently regarding the disease as a form of bronchitis. He has little faith in any of the class of antispasmodics, having tried opium, morphine, belladonna, hydrocyanic acid, the hydrocyanates of iron and zinc, assafœtida, tobacco, and the sedum

* Med.-Chirur. Trans. Vol. xxviii. † Med. Gaz. Oct. 17, and Nov. 14, 1845.
‡ Medicinische Corresp.. Blatt, in Encylographie der Sciences Méd. Mai 1845.
§ Canstatt Jahrbuch, 7 Cahier. ‖ Gaz. des Hôpitaux Août 1845.
¶ Lancet, June 21, 1845. ** Encyclograp. des Sciencss Méd. Juillet 1845.

palustre, without finding the paroxysms mitigated by any of them. Not so, however, of the nitrate of silver, of which the author speaks in high terms of commendation, stating that he has seen it, in the dose of $\frac{1}{12}$ of a grain three times a day, of unquestionable utility.

M. Bouchut* points out a fact which has frequently been noticed; viz. that the occurrence of febrile disturbance, during the course of hooping-cough, occasionally suspends, or entirely cures the cough.

33. *Diarrhœa.*—M. Bouchut† distinguishes three forms of infantile diarrhœa: 1, That depending upon a simple increase of the peristaltic action of the bowels; 2, That which originates in a catarrhal state of the mucous membrane; 3, That which results from inflammation. The latter form is the most important, being frequently fatal in children of a weakly constitution, or in those which have been exhausted by previous illness. It declares itself by restlessness, loss of appetite and irritability of the stomach, and fæculent diarrhœa. As the disease progresses the child emaciates, the mouth becomes dry and aphthous, and the diarrhœa increases, the evacuations becoming strongly acid. The infant speedily passes into a fatal typhoid condition. The treatment adopted by M. Bouchut consists in a change of nurse if it be at the breast, and restoring it if it has been weaned. In addition to this he places great faith in emetics of ipecacuanha. As an astringent he prefers the nitrate of silver in the dose of $\frac{1}{6}$ of a grain.

* Manuel Pratique des Maladies des Nouveau-Nés, &c. † Op. cjt.

IV.

REPORT ON THE PROGRESS OF ANATOMY AND PHYSIOLOGY.

BY W. S. KIRKES, ESQ., M.R.C.S.

§ 1.—*The Blood.*

1. *Development of blood-corpuscle.*—From some investigations into the mode of development of blood-corpuscle in various classes of animals, Mr. Wharton Jones* concludes that the changes in development undergone by these corpuscles are exactly the same in the blood both of vertebrate and of invertebrate animals, with the exception that in the invertebrata the corpuscles attain their full perfection, and stop short, before arriving at the stage of the red corpuscle which is common to the blood of vertebrate animals. In this view Mr. Wharton Jones is confirmed by Mr. G. Newport.† In the blood-corpuscles of the crab Mr. Jones was able to detect a very appreciable quantity of iron.

2. *Milky serum.*—Dr. Buchanan,‡ having continued his researches on the effects produced by food on the blood, finds that the milkiness of the serum (which frequently, if not invariably, occurs after taking food) may commence as early as half an hour after an ordinary meal, and may continue ten or twelve, sometimes even eighteen hours, according to the kind of food and the state of digestion. The essential condition to the production of the milky serum, seems to be the presence of oily matter in combination with protein-compounds, or with starch in the food; for if any of these substances, such as *starch*, *sugar*, (and probably all vegetable substances destitute of oil) also *fibrin*, *albumen*, or *casein* (and probably all other forms of *protein-compounds*) be administered in food entirely deprived of oily matters, no milkiness in the serum is produced, whereas it occurs at once if oily matters have been taken. Gelatin seems to render the serum white, yet this cannot be regarded as certainly established, for in the only two cases in which the effect of gelatin was tried it was questionable whether some fat had not found its way into the food partaken of.

3. *Coagulability of fibrin.*—Dr. Buchanan§ has offered some original views respecting the coagulability of fibrin. It has hitherto been supposed, and apparently on good grounds, that fibrin possesses a spontaneous tendency to coagulate, by which inherent property it is distinguished

* Abstract of a paper read before the Royal Society, in Magazine of Natural History, Aug. 1845. † Philosoph. Magazine, May 1845. ‡ London Med. Gaz. Oct. 10, 1845. § Ib. Aug. 8, 1845.

from albumen and casein, which latter substances only coagulate on the application of certain re-agents; but from the results of several interesting experiments which he details, Dr. Buchanan considers that even fibrin coagulates only when acted on by certain substances, and if these substances do not exist in a solution containing fibrin such as in dropsical fluids, no coagulation of the fibrinous principles takes place until they be added. According to Dr. Buchanan's view, the elements in the blood which cause fibrin to coagulate are the white corpuscles. [Yet in Müller's experiment of filtering frog's blood, the fluid which passed through the filter contained no microscopic globules at all, still it coagulated perfectly.] When liquor sanguinis is effused into living tissues Dr. Buchanan considers that the contained fibrin coagulates through the influence exerted upon it by these tissues, and the more simple in structure they are, the more energetically do they induce the coagulability of the fibrin.

Mr. Addison* has contributed further observations in favour of his opinion that the fibrinous principle of the blood is contained within the colourless blood-corpuscles, and does not exist simply in solution in the liquor sanguinis, at least not until after the rupture of these corpuscles and the discharge of their contents.†

4. *Accumulation of blood in the large veins after death.*—The circumstance of blood accumulating after death in the large veins and right cavities of the heart is attributed by M. Lesauvage‡ in a great measure to the effect of the cooling of the body which takes place first in the extremities and on the external parts of the body: in consequence of this process of cooling the tissues and vessels contract, and the blood is directed to the internal parts of the body which cool latest: the post-mortem contraction of the muscles will likewise have a tendency to force the blood into the interior of the body.

§ II.—*Digestion.*

5. *Rate at which chyle enters the blood.*—Some experiments, undertaken with the view of determining the rate at which chyle passes from the thoracic duct into the circulating system, have been performed by Dr. Bidder.§ Dogs and cats were the animals experimented on; they were killed by strangulation in order to avoid any great loss of blood, which would probably have caused a more rapid flow of chyle, and thus have interfered with the accuracy of the results. After death the sternum and anterior parts of the ribs were removed, and the left lung pushed aside, in order to reach the thoracic duct, which was then cut across (a ligature having been placed around it above the incision), and the lower divided extremity placed in a glass vessel so as to collect and measure the flowing chyle. After operating in this manner on several cats, he calculated that the quantity of chyle which flowed from the thoracic duct of each in twenty-four hours (averaging from one to two pounds), was in proportion to the weight of the body as 43 : 229, or as 1 : 5·34. From this it would appear that, since (according to Valentin's calculation) the quantity of blood in a cat's body bears to the weight of the entire animal the ratio of

* The actual Process of Nutrition, &c. 1845, p. 37. † Mr. Gulliver's paper on the Buffy Coat of the Blood, an abstract of which was given in last Report, is published in the Edin. Med. and Surg. Journal, Oct. 1845. ‡ Comptes Rendus, Août 25, 1845. § Muller's Archiv, Heft 1, 1845; an abstract of the paper is given in Schmidt's Jahrbücher, No. 7, 1845, p. 23.

1 : 5·75, the quantity of chyle which passes from the thoracic duct into the circulatory system in the course of twenty-four hours, is about equal in weight to the entire mass of blood in the body, and exceeds it in volume. Experimenting in the same way upon dogs, and following similar calculations, he found that the quantity of chyle which passes into the circulating system of each, was about two thirds that of the entire mass of blood.*

6. *Thoracic duct.*—Several anomalies in the disposition of this duct have been mentioned; one by Professor Putrubau,† in which the duct, originating in the usual way, when arrived opposite the seventh dorsal vertebra divided into two equal-sized branches. The left branch deviated suddenly from the middle line and passed directly towards its destination; when near the left subclavian artery it subdivided into two more branches, which curved round the artery, and thus reached the angle of junction of the left subclavian and jugular veins into which they emptied themselves by two distinct openings situated close to each other. The right division ascended in a spiral curve to the angle of junction of the right subclavian and jugular veins, into which it entered by a single opening. This complete bifurcation of the thoracic duct, although of rare occurrence, has been noticed by J. F. Meckel, and some others. Another anomalous case is mentioned by Professor Soitzer.‡ The duct commenced, as usual, on the first lumbar vertebra, and ascended entire to the eleventh dorsal, at which point it gave off a branch of larger size than the duct itself; this branch ran in front of the thoracic aorta, round which it curved, passing between the artery and the spine, then ascended over the eleventh and tenth dorsal vertebræ, formed a loop round the vena azygos and entered the throracic duct again at a right angle.

§ III.—*Circulation.*

7. *Impulse and sounds of the heart.*—The coincidence of the impulse of the heart against the walls of the chest with the ventricular systole, which is still denied by some, has received further confirmation from some researches by Dr. Gola.§ Not that such confirmation was necessary, the fact having been abundantly proved and established long since. M. Parchappe‖ has needlessly repeated the cruel experiment of exposing the heart of living animals for the purpose of ascertaining whether any sound appreciable by the stethoscope is given out during the contraction of this organ: he says there is not; but the results of previous experiments on the contraction of the heart and other muscular parts, render the truth of this assertion questionable.

8. *Relative force of the two ventricles.*—Ludwig¶ has recently questioned

* Among other observers who have endeavoured to determine the rate at which chyle passes into the blood, reference is made to Haller, (Elementa Physiol. vol. 7, p. 233), who states that only from four to eight ounces of chyle are prepared daily; to Magendie (Précis élément. de Physiol. 1825, t. 2, p. 183), who obtained from the thoracic duct of a dog, opened in the neck, half an ounce of fluid in five minutes, or at the rate of six ounces per hour; to Martigny (Magendie's Journ. de Physiol. t. 8, p. 176), who procured only nine grains of chyle in ten minutes from a rabbit; also to Cruikshank and Lieberkuhn, who made eqally indefinite statements.

† Schmidt's Jahrbücher, Heft 3, 1845.

‡ Muller's Archiv, Heft 1, 1845.

§ Archives Gén. de Méd. Juin 1845.

‖ Gaz. Méd. Juin 28, 1845, p. 415.

¶ Schmidt's Jahrbücher, No. 6, 1845.

the accuracy of many of the conclusions drawn by Valentin from his experiments on respiration and circulation. One amongst other statements made by Valentin was, that inasmuch as he had determined the weight of the muscular substance of the left ventricle of the heart to be twice that of the muscular substance of the right, so the force exerted by the right ventricle in contracting could only be half that exerted by the left. Ludwig, however, found, in thus endeavouring to estimate the relative forces of the two ventricles, that much depended upon whether the muscular substance was weighed in a moist or in a dry state, for he found the muscular tissue of the left ventricle to contain a much less proportionate quantity of water than that of the right, and consequently to have a much greater relative weight when dried than when moist. He considered, therefore, that the mere determining the relative weight of the two ventricles to be an incorrect mode of estimating their relative forces, whether this estimate was formed from the weight of the dry or (especially) of the moist muscular substance; unless, indeed, it could be determined that a given quantity of water was necessary to the production of its fullest amount of force in a given quantity of muscular substance. Were it, however, to be admitted that the difference in weight between the muscular substance of the two ventricles, when weighed in a moist state, might be taken as the estimate of the relative force of each when contracting, even then it would be difficult to prove that the force of the left ventricle bears to that of the right the ratio of two to one, because in these calculations the share taken in the force of each by the muscular substance of the septum cannot be duly estimated. Valentin calculated that two thirds of the force of the septum was expended upon the left ventricle, and the remaining third only upon the right; but this division of the force exerted by the muscular fibres of the septum, Ludwig justly observes, cannot be conceived to take place, because of the intimate interlacement of the fibres composing the septum, and of the fact that the two ventricles contract simultaneously. It seems most probable that the septum is formed almost as much by the walls of one ventricle as by those of the other, and that it contributes nearly an equal amount of force towards emptying the cavity of each during contraction. [It should be observed, that the estimates made by Valentin were only intended to serve as average ones, and that as such they answer as well, or perhaps better, than any yet given.]*

9. *Venous circulation.*—Some experiments, undertaken chiefly with the view of estimating the amount of force exercised by the current of blood in the venous system, and of determining what are the agents concerned in the production of this force, have been performed by Dr. Mogk.† In these experiments he made use of Poiseuille's hæmadynameter, but modified in such a way that by its application the amount of lateral pressure exercised by the venous blood upon its walls could be estimated without any obstruction being offered to the current.‡ His researches have added confirmation to what was previously ascertained, namely, that although the respiratory movements and muscular contraction are by no means essential conditions to the movement of blood in the veins, yet that they

* In Muller's Archiv, Heft 2 and 3, 1845, there is a very long paper by Dr H. Frey, on the wave-movement of blood in the arterial system; it will probably be noticed with one or two contributions on the same subject in next Report.

† Schmidt's Jahrbucher, No. 6, 1845; extracted from Henle's and Pfeufer's Zeitschrift, 1, 3. ‡ The apparatus was probably similar to that used by Valentin for the same purpose, and to that employed by Spengler in his experiment to estimate the force of the current of arterial blood. (Müller's Archiv, Heft 1, 1844.)

each by their action contribute towards increasing the force of the current, particularly muscular contraction, when its influence is exerted upon veins provided with valves. It was proved by the experiments of Poiseuille, and more recently by those of Valentin, that during inspiration, venous (as also arterial) blood is drawn more rapidly to the heart than during the period of rest in the respiratory movement. Mogk states that this influence is exerted only upon those large veins which are situated in the immediate neighbourhood of the heart, and not upon the more distant ones. [This is undoubtedly true in the main, yet whatever expedites or retards the flow of blood in these large veins, must to some extent influence also the current in all the veins behind them.] Mogk found that the auricles exerted no suction power whatever on the current of venous blood. With regard to the agents concerned in the production of the venous current, he endeavoured especially to determine the relative shares contributed by the contractile power of the walls of the veins, by the capillary system, and by the action of the heart. He confirms previous observers in stating that the former is without any influence on the movement of the blood; the amount of contractile power possessed by the coats of the veins is very small; but even were it much larger, and were it to be exerted upon the current of blood within, it is obvious that its effect would be as much to drive the blood backwards as onwards, especially in those veins which are unprovided with valves. Respecting the influence exerted upon the venous current by the capillary system, Mogk states that for "physiological and physical reasons," none can exist. [This is too strong an assertion, for it seems quite certain that the capillaries do possess the power of regulating, under certain circumstances, the quantity of blood which shall pass through them—indeed, he admits that they do; and some, although probably a trifling influence must thereby be exerted on the force and rapidity of the venous current.] Nothing, therefore, remains to account for the production of the venous current but the ventricular action of the heart, and it seems most probable that this is the chief, if not, as Mogk considers, the sole cause of the movement of blood in the veins. The amount of pressure exercised by the current of blood in the arterial system Mogk calculated was at least ten times as great as that exercised by the blood in the venous system.

10. *Structure of veins.*—Some observations on the structural anatomy of veins have been made by Dr. Norman Chevers,* from which it would appear that, in some respects, the structure of these vessels varies according as they are situated in the internal or the external parts of the body. The proper or middle tunic of the *internal* or deep veins of the trunk is composed almost entirely of several layers of strong elastic fibres, running parallel to each other, without any interlacement, and disposed in a circular direction around the vessels. In the *external* veins (with the exception of the epigastric and internal mammary), the middle tunic is still composed of a dense layer of circular fibres; but within this there is also another layer, of which the fibres run in a longitudinal direction.†

11. *Development of capillaries.*—Platner‡ has added confirmation to the account given by Prevost and Lebert,§ of the mode in which capillary ves-

* Med. Gaz. Aug. 8, 1845. † For some curious arrangements observed in individual veins we must refer to the original paper. ‡ Schmidt's Jahrbucher, No. 6, 1845. Platner's original paper is given in Muller's Archiv, Heft 5, 1844. § Annal des Sciences Nat. Avril 1844. Also notice of same in Paget's Report, British and Foreign Med. Review, April 1845, p. 588.

sels are developed in new structures. These vessels never originate independently of the general circulation, but are invariably formed by offshoots from previously existing vessels, which offshoots arch and unite with each other so as to form common continuous tubes. This mode of development may be observed best in the tails of young tritons, in some of which may be seen numerous blind sac-like extremities of capillaries, in others long narrow processes may be noticed arising from these sac-like extremities, and insensibly disappearing from view, whilst in others again many of these processes may be found united to each other, forming a network of continuous arches. These arches, or capillary loops, are at first very narrow, and apparently impermeable to blood-corpuscles, their interior being occupied and blocked up by a finely granular material: soon, however, they increase in diameter, and the double contour of a distinct wall becomes perceptible, especially at the points where the narrow tubes are connected with the main capillary trunks. The nuclei which are observed on the walls of fully-developed capillaries Platner conceives to be structures of later formation, and not to be the nuclei of cells which have preceded the development of the capillaries, and from the fusing together of the walls of which cells Schwann considered the capillary vessels to be formed. Platner also adds doubts whether the nucleus fibres of fibro-cellular tissue and of muscle described by Henle, consist of nuclei which have belonged to previously existing cells, or are structures of after formation.

§ IV.—*Respiration and Animal Heat.*

12. *Movement of the first rib.*—M. Petrequin* has suggested an ingenious experiment to prove, what some still doubt, that the first rib is capable of movement to a certain extent during respiration. It is a known fact that the subclavian artery may be compressed between the first rib and the clavicle, and the circulation in the upper extremity consequently arrested, by forcibly drawing the shoulder backwards and downwards, and, if whilst in this condition the clavicle be elevated about four lines, the circulation is restored in the arm. By the application of this experiment M. Petrequin has determined the question respecting the movement of the first rib, for if this bone is alternately elevated and depressed during respiration, then should the circulation in the arm alternately disappear and return as the individual inspires and expires, and so it is, for if, whilst the shoulders are kept in the above position, a full inspiration be made, the pulse in the brachial artery ceases at once, and again makes its appearance upon expiration, leaving no doubt as to the fact of the first rib being elevated during each inspiratory act. [That such movement takes place in women is sufficiently obvious during life, and its greater amount in them than in man is explained by the more moveable nature of the articulation of the first rib with the spine in the former than in the latter; but even in man the articulation allows of movement to a certain extent.]

13. *Purposes served by the glottis.*—Dr. Bergmann† assigns to the glottis another function besides that of being subservient to the production of voice, and of acting as a guard to the air-passages. The additional purpose served by this narrow opening at the summit of the respiratory tract, he explains by reference to a principle in pneumo-dynamics. When a fluid moves through a cylinder which is of an uniform caliber throughout,

* British and Foreign Med. Rev. July 1845, p. 135.

† Muller's Archiv, Heft 4, 1845.

with the exception of at one point where it is contracted, it follows of necessity that at this narrowed point it will have a greater degree of velocity than elsewhere; and, as Bergmann states, this velocity does not cease when the fluid leaves the contracted part, but is continued through the axis of the fluid in the wide part of the cylinder, the consequence of which is, that the central portion of the fluid, by corresponding directly to the swift current passing through the narrowed part, moves with greater velocity than the portions of fluid nearer to the walls of the tube. Now, applying this principle to what takes place in the respiratory passages, it follows that pure air entering through the glottis (the narrow part of the tube) will, by having its velocity increased, and the velocity propagated down the trachea and bronchi in a line directly continuous with the narrow opening of the glottis, arrive more speedily at its destination in the lungs than if the larynx and trachea had been of an uniform caliber throughout: the same will apply to expiration, when, by the above arrangement, the passage of the carbonized air from the lungs outwards will be greatly facilitated. The advantages of such an arrangement are sufficiently obvious; they ensure a large supply of almost pure air to the lungs at each inspiration, and favour the rapid expiration of that which is charged with carbonic acid.

14. *Asphyxia.*—Some physiological facts with respect te asphyxia may be gathered from a series of interesting papers on the subject by Dr. Charles Clay, of Manchester.*

15. *Animal temperature.*—Dr. John Davy,† having continued his observations on animal temperature, chiefly with the view of proving that the temperature of the human body is not a constant but a variable one, finds amongst other points that the temperature is highest in the morning after rising from sleep, continues high, but fluctuating till evening, is lowest about midnight, ranging on an average from 98° to 97·9°. Sustained attention or mental exertion, as might be supposed, raises the temperature in a much less degree than bodily exertion does.

16. *Temperature of the body after death.*—That in some cases the temperature of the human body after death, instead of gradually falling, actually rises and gains even a considerably higher amount than it had in the highest stage of fever, was first noticed by Dr. John Davy; but the circumstance has not since attracted much attention. Some strange results, however, on the subject have been recently obtained by Dr. Bennet Dowler, from numerous observations on the temperature of the body immediately before and after death from fever, and are given in an American journal.‡ The best way in which these results can be shown is by extracting several of his cases.

"Case 1.—Highest temperature during life in the axilla 104°, ten minutes after death, in the axilla 109°; fifteen m. in the thigh 113°, or 9° above the living maximum; in twenty minutes the liver gives 112°; in one hour and forty minutes the heart gives 109°; thigh, old incision, 109°; in three hours, after removing all the viscera, a new incision in the thigh gave 110°, or 6° above the living maximum.

"Case 2.—Alive, axilla 100°, hand 91°; dead, one hour and six minutes; axilla, at the end of every five minutes, 102°, 104°, 107°; thigh, 107°; two hours after death, centre of the left lung, 106°; apex, 104°; heart, 104°; thigh, 106°; three hours, axilla, 104°; liver, 106°; thigh, 106°;

* Med. Times, Sept. 6, et seq. 1845. † Magazine of Natural History, Aug. 1845; abstract of paper read before the Royal Society. ‡ Med. Exam. June 1845.

rectum, 105°; twenty-three hours after death, room, 90°, thigh, 88°; putrefaction commenced.

" Case 3.—Last stage, hand, 91°; axilla, 100°; dead, thirty minutes, axilla, 104°; perineum without incision, 102°; rectum, 102°; epigastrium, 103°; brain, through the orbit, 102°; body appeared to be growing hotter, when demanded by friends for interment.

" Case 4.—Last stage, hand, 70°, (7° less than the air); axilla, 95°; about two hours after death, axilla, 100°; rectum, 104°; axilla rose to 102°; epigastrium, 101°; thigh, 102°; brain, 99°; heart and left side of chest 100°.

" Case 5.—Two days before death, hand, 101°; axilla, 104°; one day before death, hand, 100°; axilla, 100°; dead five minutes, axilla gave at different periods, and was still rising, 103°, 4°, 5°, 6°; epigastrium, 106°; brain, 101° and falling; the thigh 101°, though exposed to a cold wind, which sunk the mercury 10° during the observations.

" Case 6.—Air cold (Oct. 26), mercury falling 3° or 4° per hour; dead one hour, axilla, 103°; epigastrium, 104° nearly; liver, 108° and rising; brain, 88°, falling; two hours after death, thigh, 104°; left side of chest, 97°.

It would appear from the above that the maximum of post-mortem heat has been observed in the thigh. The following table shows the highest amount of temperature observed in the eight principal regions in different subjects.

Thigh.	Epigast.	Axilla.	Chest.	Heart.	Brain.	Rectum.	Liver.
Deg.	Deg	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.
113	111	109	107	109	102	111	112
109	110	109	106·5	106	101	109	109
109	109	108	106	105	101	107	108
109	109	108	106	104	100	107	107
108	109	107	105	104	99	106	106
Mean 109·4	109·6	108.2	106·1	105·6	100·6	108	108·4

§ V.—*Kidneys, and the Secretion of Urine.*

17. *Minute anatomy of the kidney.*—Some opposition having been offered by Reichert,* Ruschke, and others, to the full reception of the statements made by Mr. Bowman, in his excellent account of the minute structure of the kidney,† Dr. Gerlach‡ was led to institute some further investigations, and the results he obtained confirm in most particulars the description given by Mr. Bowman. One of the essential peculiarities noticed by Mr. Bowman in the structure of the kidney was the immediate connexion existing between the Malpighian tufts of vessels (or bodies) and the uriniferous tubules in the kidneys, both of man and of all animals, so far as he had examined them; an arrangement which had been frequently before supposed, but never actually proved to exist. Upon the

* Report on the progress of Microscopic Anatomy in Muller's Archiv for 1843, p. 221. † Philosoph. Transactions, 1842. ‡ Muller's Archiv, Heft 4, 1845.

publication of Mr. Bowman's account, Reichert, and some others, made several attempts to discern this connexion, but were unsuccessful, and they accordingly offered statements which were opposed to the description given by Bowman. Upon repeating Reichert's method of examination, which consisted in making extremely fine sections of the substance of the kidney, and carefully examining them beneath the microscope, also in isolating the several Malpighian bodies as much as possible, Gerlach came to the same conclusion which Reichert had arrived at, and was inclined to deny the existence of a direct continuity between the Malpighian bodies and the uriniferous tubercles; and it was not until he had resorted to repeated and careful injections of the kidney through the urinary tubes that he succeeded in clearly determining that such an arrangement does in reality exist. After many attempts, he seems to have succeeded in injecting the urinary tubercles more completely than has been yet done, and has contrived to make some of his injection fluid pass into and distend the capsules within which the Malpighian tufts are inclosed; a result which Bowman considered to be almost impracticable, owing to the length and tortuosity of the tubules, the delicate nature of their walls, and to there being no vent by which the secreted fluid already contained within the tubules could pass out, and so make way for the injection to enter. For the purpose of injecting the tubules, Dr. Gerlach recommends the employment of sheep's kidneys, for in these animals the tubules are tolerably wide: it is quite essential to success that the kidneys be perfectly fresh. The following may be stated as the chief results which Gerlach obtained from his investigations: 1. The fact of the direct continuity of the Malpighian capsules with the uriniferous tubules, as discovered by Bowman, was clearly confirmed, but it would seem that Bowman's account, which describes the tubules as terminating in these capsules as by so many blind pouches is not quite correct: the capsules are merely offshoots, or sac-like dilatations from the sides of each tubule with the cavity of which they communicate by a slightly narrowed neck, and are not placed at the terminal extremities of the tubules. Gerlach states that a tubule, having given rise to a pouch, continues its way onwards, forming fresh pouches here and there and eventually terminates, not in a blind extremity, but by forming a loop: and these loops which the various tubules form have, doubtless, been mistaken for so many blind extremities. 2. These pouch-like dilatations (which are the capsules of the Malpighian tufts first described by Müller), are composed of the same structureless membrane as the uriniferous tubes into which they directly open. Bowman's description of the Malpighian tufts contained within the capsule is, on the whole, confirmed; the single efferent and afferent vessels belonging to the tuft perforate the capsule close to each other as described by him, although the point at which they enter does not seem in all cases to be directly opposite that at which the capsule communicates with the uriniferous tubule.* 3. A curious circumstance remarked by Bowman was that each Malpighian tuft lies quite free within the cavity formed by the capsule, uncovered even by a layer of epithelium: this being the only known instance of a blood-vessel lying bare on a secreting surface, naturally attracted much attention, and was discredited by Reichert and others.

* In searching for this continuity between the capsules and tubes beneath the microscope, Dr. Gerlach mentions a caution that the object should not be covered by glass, otherwise the globular form of the capsule is altered, and the detection of the continuity becomes almost impossible.

Bowman inferred from such an arrangement that the watery and soluble parts of the urine are distilled from the blood of the vessels composing the tufts, whilst the essential elements of the urinary secretion are eliminated by the cells lining the internal surface of the tubuli uriniferi. Gerlach states that he examined this point, and found upon removing the capsule that the Malpighian tuft was completely covered by a thick layer of nucleated cells. This layer he states to be continued from the one which lines the entire internal surface of the capsule, and which is reflected from this surface on to the Malpighian body, just as the peritoneal coat lining the internal surface of the abdominal cavity is reflected on to the intestines; in both cases a space exists just at the points of reflection which is uncovered by epithelium. The vessels composing the Malpighian tuft therefore are in immediate contact with, or imbedded in a thick layer of nucleated cells which doubtless are actively engaged in carrying on the process of urinary secretion. 4. Bowman described the existence in frogs of a layer of ciliary epithelium lining the entrance of the tubules into the Malpighian capsules, but was not able to trace it far into the interior of the capsule. Neither Ruschke nor Reichert were able to detect this ciliary movement, but it was observed, both by Bischoff* and by Valentin,† the latter noticed it, not merely at the part mentioned by Bowman as the seat of its occurrence, but also within the capsule itself; in this he was confirmed by Pappenheim. On this point Gerlach observes that in the kidneys of mammalia he has never been able to detect this ciliary movement at any part of the tubule or capsule, although he has made numerous attempts and examined kidneys in a perfectly fresh state; whereas, in the fresh kidneys of frogs, he has frequently noticed it both at the entrance of the tubule into the capsule and over the entire internal surface of the capsule itself, thus confirming Valentin's statement. He considers it probable that this movement exists also in the kidneys of the higher orders of animals as well as in the frog, but that from the fineness of the cilia it has yet escaped observation.

18. *Weight of the kidneys.*—According to Ruschke‡, the kidneys of the new-born child, although absolutely much lighter than in the adult, are yet in proportion to the whole body much heavier, inasmuch as the weight of the two kidneys is to that of the whole body of the infant as 1 : 82—100, in the adult in the relation of 1 : 225. They therefore do not grow uniformly with the rest of the body, although the secretion of urine becomes more energetic after birth.

19. *Excretion of urine.*—A case of extroversion of the bladder, in a lad 13 years of age, having fallen under the observation of Mr. Erichsen, several interesting facts in relation especially to the excretion of urine were obtained.§ The orifice of each ureter in the bladder appeared, when closed, as a small irregularly oval depression, about a line in diameter, situated on the summit of a conical papilla of the mucous membrane. A probe might be passed up the ureters for several inches without any sensible inconvenience being produced. From some observations made as to the phenomena attending the passage of the urine from the ureters into the bladder, it appears that in the first place a drop collects within the papillary termination of the ureter which becomes somewhat distended; the orifice of this canal then opens to an extent of from two to three lines in diameter, and as soon as it has allowed the drop of urine to pass, it

* Muller's Archiv, 1843, p. 132.

† Valentin's Repert., bd. 8, p. 92.

‡ Brit. and For. Med. Review, Oct. 1845, p. 420.

§ London Med. Gaz. June 27, July 4, 1845.

contracts with a sphincter-like action. The distension of the lower end of the urcter before the drop of urine cscapes was very distinct, and the relaxation of the orifice of the canal had the appearance of being occasioned by the accumulation of the drop of fluid that collects above it. The closure of the vesical termination of the ureter, after the escape of the drop of urine, was accompanied by a slight retraction of the papillary bulging of the mucous membrane on which it terminated, and the whole process resembled an ordinary sphincter action. The two ureters did not open at the same time, but with an irregularly alternating action. During the periods of fasting the ureters opened on an average about three times in the minute, consequently the quantity of urine discharged from both ureters may be estimated as about three large drops in the same space of time, although this might be taken as the average rate of discharge, yet the action of the ureters was by no means regular, inasmuch as two or three drops would sometimes flow in rapid succession, whilst at other times a comparatively long interval would elapse between the escape of any two drops. When the patient laid on his back the discharge was slow and gentle, being unattended with the distinct opening and shutting of the end of the tube noticed when in the upright position. During a deep inspiration, as in yawning or coughing, or whilst straining at stool, the flow of urine was suddenly increased, and the fluid then escaped in a small stream, or in several large drops, in rapid succession. The urine itself was invariably acid, often highly so, whilst the mucous membrane of the bladder possessed a highly alkaline reaction; it was covered by a viscid glairy mucus, and was extremely sensitive to the touch. Some interesting experiments were undertaken with the view of determining the rapidity with which certain substances after being taken into the stomach are eliminated by the kidneys; and they corroborate very satisfactorily the observations of other experimenters respecting the rapidity with which under favorable circumstances various substances may be absorbed into the circulation and appear in the urine. On experimenting with prussiate of potash, the earliest period at which this salt made its appearance in the urine after it had been swallowed was about one minute, and the longest time that elapsed before it could be detected was thirty-nine minutes. From the results of a table which Mr. Erichsen gives, it would appear that this difference may be explained by the condition of the stomach in regard to its contents at the times at which the salt was taken; thus when the stomach was empty, and so the condition for absorption most favorable, the salt found its way to the urine most rapidly, but when swallowed immediately after a meal, the time required for its absorption and appearance in the urine was much longer: and this length of time seemed proportioned to the degree of fulness of the stomach when the salt was taken. Vegetable infusions seem to require a much greater average time for their appearance in the urine than prussiate of potash: as in the case of this salt and of the other substances experimented with, the rapidity of their absorption was dependent on the condition of the stomach in regard to its contents at the time the substances were swallowed. In order to ascertain how soon the urine would become alkaline after the administration of the salts of the fixed alkalies, the citrates and tartrate of potash and soda were at various times given in full doses: the patient could not be induced to take the carbonate of these alkalies, or the liq or potassa in any sufficient quantity. The diuretic action of citrate of soda was very marked, as also its effect in speedily altering the secretion of the urine from acid to alkaline; about two hours and a half after a slight meal a solution of 3ij of bicarbonate of soda, saturated with lemon-juice, was administered

in a tumbler of water. At the time of taking the mixture the urine was very acid, and was flowing at the rate of three drops per minute. Five minutes after taking this citrate of soda the flow of urine had increased to nine drops per minute, and at the twenty-eighth minute it became suddenly and most distinctly alkaline: the urine was now flowing at the rate of fourteen drops per minute. On the evening of the following day (about twenty-seven hours after the administration of the salts) the urine was again examined; it was very strongly alkaline, and was passing away at the rate of sixteen or eighteen drops per minute, and occasionally in a small stream; from the patient's statement it had been passing at this rate all day. After this the urine was examined twice daily, and continued alkaline until the fourth day, and it was not until the sixth day that it recovered its usual acid reaction. From a single case in which the citrate of potash was administered, the urine did not appear to be much augmented, although it was rendered distinctly alkaline, showing, so far as it goes, the superiority of the citrate as a diuretic. When the feet and legs were immersed in a a pailful of tepid water, in which three ounces of acetate of potash were dissolved, the urine in about an hour became distinctly alkaline, and the rate of discharge increased from five to eight drops per minute. The effects of several other salts were tried in the same way, but no change in the condition of the urine could be detected. The influcnce of digestion on the rapidity of the secretion of urine was well marked in many of the observations. The effects were uniformly as follows. For about twenty minutes after a meal the secretion was much diminished, aud occasionally ceased entirely for a fcw minutes; at the end of this period it began again with increased rapidity and continued in larger amount than usual until the digestive process was completed, by which time it had generally fallen to its ordinary standard. This increase in the quantity of the secretion occurred equally, whether drink was taken at the meal or not, though not to the same extent or so rapidly when solid food only wes taken. The effect of active exertion was shown to increase in a very marked degree the quantity of urine excreted, whilst rest was found to have a directly contrary influence [showing therefore that the quantity of urine eliminated is not so immediately proportioned to the amount of fluid lost by perspiration as is commonly supposed.]

20. *Effects of mental emotion on secretion.*—A curious case illustrating the influencc of the passions of the mind on the secretion of milk is narrated by M. Krummacher.* A woman, immediately after being in a violent rage, put her infant, aged eight months, to her breast; the child at first refused to suck, but eventually did so, though it shortly afterwards vomited the milk which it had taken: in a few hours afterwards the child took the other breast, but was shortly attacked with violent convulsions which, after continuing with unabated severity for some time, terminated in death.

§ VI.—*Nervous System.*

21. *Effects of removal of the cerebro-spinal fluid.*—M. Longet† has disproved the correctness of the commonly received opinion, that removal of the cerebro-spinal fluid induces a singular disturbance of the motor functions. The plan recommended and usually practised for the removal of the

* Gaz. des Hôpitaux, Juin 10, 1845. † Comptes Rendus, Juin 16, 1845.

fluid, is to open the dura mater and arachnoid, between the occiput and atlas, after having cut through the parts which cover the occipito-atloidean space. The liquid once evacuated, it is asserted that the animals stumble about as though intoxicated. In the horse, dog, cat, and other animals, Longet has frequently performed the above experiment, so far as cutting through the posterior cervical muscles at their occipital insertion, as also the supra-spinous ligament, but without dividing the occipito-atloidean ligament, and consequently without giving exit to the cerebro-spinal fluid. In all these cases the animals immediately presented the same disturbance in locomotion, and the same uncertainty of gait, which have been hitherto always referred to the removal of the cerebro-spinal fluid. As a counter-proof was necessary, he withdrew this fluid without dividing the muscular and ligamentous parts in the posterior region of the neck: this he effected by removing a single vertebral lamina towards the middle of the dorsal region: immediately after the first part of the operation a slight weakness was manifested, but it was not in the least augmented by withdrawal of the fluid, and moreover the animals in no case presented any of the stumbling movements (titubation) so characteristic and so remarkable, which are observed when the soft parts alone of the neck are divided. It results from the above experiment, that the important influence over the motor function, which has been attributed to the cerebro-spinal fluid, does not exist, and that the effects which have been observed to follow the removal of this fluid, were induced by the division of the soft parts of the neck in performing the operation. M. Longet found also, that the disordered movements which result from this operation performed on mammalia, do not occur in the case of birds, the longitudinal axis of whose neck is perpendicular to that of the head, and the occipital foramen situated at the base of the cranium.

22. *Vesicular nervous matter.*—Todd and Bowman* have noticed in the gray nervous matter (especially in that taken from the cerebellum, the spinal cord, and the locus niger of the crus cerebri), that many of the ganglion-globules or nerve-vesicles are characterized by being irregular in form (not globular, like most of the rest), and by having one or more tail-like processes extended from them, for which reason they have been named *caudate* by these anatomists. These vesicles do not differ in structure from the simple and ordinary form: they are commonly of very large size. The tail-like processes which spring from them vary considerably in number and in size: in structure they are very delicate, and seem to consist mainly of a finely granular material, similar to that contained in the interior of the nerve vesicle, with which they distinctly appear to be continuous. Sometimes, one or more of them may be traced to a considerable distance, and be found to divide into two or three branches, which undergo a further subdivision, and give off some extremely fine transparent fibres, the ultimate destination of, and probable purpose served by which, remains yet to be proved. It seems probable that they either serve to connect together distant vesicles, or else that they become continuous with the axis cylinders of the tubular nerve fibres, which in most respects they very closely resemble.

23. *Radiated sensations.*—Dr. Child† suggests a not improbable explanation of at least some of the forms of radiated or secondary nervous sensations, by supposing that the nerve-fibre primarily irritated, may, after

* Physiological Anatomy of Man, vol. i, p. 213.

† London Med. Gaz. Aug. 15-22, 1845.

forming a loop in the brain, be prolonged without break into the organ secondarily or sympathetically affected, and so convey the excited impression directly to the sympathizing parts. [The looped terminations of the nerve-fibres in the nervous centres, on the existence of which this hypothesis rests, has not been certainly determined, and it seems not improbable from the recent researches of Todd and Bowman, that the primitive fibres become directly continuous with the long branching processes which these anatomists have observed to be given off from many of the ganglion-globules of the gray nervous matter.]

23. *Localization of the faculty of speech.*—In a paper read to the Academy of Medicine, M. Belhomme* attempts to prove, by the results of ten cases which he had witnessed, that the faculty of speech is located in the anterior part of the cerebral hemispheres, agreeing in this respect with the views of Bouillaud; it is difficult, however, to reconcile such an opinion with the fact, that in many cases of severe and destructive injury to the anterior portion of the brain, there is no affection of the speech whatsoever. An example of the kind occurs in a case noticed in the last Report (page 265.)

24. *Relation of extent of brain to amount of intellect.*—It would seem from some experiments by M. Baillarger,† that the amount of intellectual development in man, and in the various classes of animals, is far from being in direct ratio to the extent of surface presented by the brain of each; for instance, the brain of man has, in proportion to its volume, a much less extent of surface than the brains of the lower mammalia; and the brain of a rabbit has, in proportion to its volume, an extent of surface two and a half times larger than that presented by the brain of man.‡

25. *Animal electricity.*—M. Matteucci§ having continued his researches upon animal electricity, has obtained evidences of electro-chemical decomposition by the muscular current. From numerous experiments with frogs, he also finds, that the intensity of the muscular current is proportioned to the activity of respiration. Moreover, in operating on many warm-blooded animals, he has determined that the intensity of the current is proportioned to the rank of the animal in the scale of beings, whilst the duration of the current after death varies in an opposite ratio. With regard to the "*courant propre*" of the frog, previously described, he finds, from further observations, that this current does not belong exclusively to frogs, but exists in the muscles of all animals, provided that these muscles present, at their extremities, an uneven tendinous termination.

26. *Nerves in periosteum.*—Professor Purkinje‖ describes the existence of a rich plexus of fine nerves in the periosteum of the tibia, which he states to have discovered by means of the solvent action of acetic acid on the cellular and fibrous tissue, whereby the nerves, resisting the action of

* Archives Gén. de Méd. Mai 1845. † Review Méd. Mai 1845.

‡ Some physiological facts on the structure and functions of the brain may be collected from the series of lectures by M. Pinel, and by M. Bouillaud, published in the Med. Times; from the lectures of Baillarger in the Lancet; and from the correspondence between Dr. Reid, Dr. Laycock, and Mr. Combe, on the reflex function of the brain, published in the Lancet. § Encyclographie des Sciences Méd. Mai 1845; Gaz. Méd. Avril 19, and other French Journals of the same period, from Report to the Academy of Science, April 4, 1845; Abstract, vol. I, p. 266.

‖ Muller's Archiv, Heft 4, 1845; also in London Med. Gaz. Oct. 31, 1845, translated by Dr. Gull.

the acid, are left beautifully distinct. He thinks it probable that the periosteum of other bones, and the aponeuroses, may also be found to contain nervous filaments.*

§ VII.—*Organs of the Special Senses.*

27. *Taste. Papillary structure of the tongue.*—An excellent and, in many respects, original account of the papillary structure of the tongue is contained in the second part of Todd and Bowman's Physiological Anatomy of Man.† There are three varieties of papillæ visible on the dorsal aspect of the tongue, namely, "the *circumvallate*, or *calyciform*, eight or ten in number, situated in a V-shaped line at the base of the organ; the *fungiform*, scattered over the surface, especially in front of the circumvallate, and about the sides and apex; and the *conical*, or *filiform*, much the most numerous, studding most of the surface, though most largely developed in the central part;"—these three varieties, although they have hitherto been regarded as simple papillæ, are in reality compound organs, being clothed with a number of secondary, simple, and much more minute papillæ; which, from being covered over by the epithelial investment, and not visible until this covering is removed, have hitherto escaped notice. These simple papillæ, besides being set upon the compound ones, are also found scattered over the whole surface of the tongue, lying among the compound ones; and they likewise occupy a large portion of the smooth mucous surface immediately in front of the epiglottis, at which part their structure may be best examined, because they are there unaccompanied by the large compound papillæ. When examined at this part, each simple papilla is found to consist of an envelope of basement or structureless membrane, enclosing an obscurely granular matter, within which one or two minute capillary loops of blood-vessels are imbedded; the basement membrane of each papilla is invested externally by a delicate layer of scaly epithelium, which being covered again by the general epithelium, renders the several papillæ invisible, until the entire epithelial investment is removed. The authors have not been able to trace any nerve tubules into the papillæ at this part, although probably they exist there, but deprived of their white substance. The secondary papillæ, over the *circumvallate* and *fungiform* varieties of the compound papillæ, have a structure in all respects similar to that of those just described; but when situated over the *filiform* papillæ, they present some distinctive peculiarities, being larger and more pointed, also possessing considerable stiffness and elasticity; the latter quality depends on a quantity of yellow fibrous tissue which they contain, and which with a wavy, almost spiral character, runs in a general longitudinal direction up the papilla. Nerve-fibres are commonly found within this variety of the secondary papillæ, especially when examined near the apex of the tongue. Occasionally the authors have noticed these nerve-tubules to terminate in loops,—probably they all do so. Besides these peculiarities in their secondary papillæ, the *conical* or *filiform* variety of the compound papillæ are distinguished by the peculiar form, which their name expresses; also

* In the last report mention was made of M. Bourgery's researches into the sympathetic or splanchnic system of nerves; the whole of these researches have been published in several long papers in the Gaz. Méd. of Mai 3-10, and Septembre 6-13, 1845.

† Page 434, et seq.

by "their whitish tint, derived from the thickness and density of their epithelium. This epithelium, indeed, frequently composes two thirds of their length, being sent off from the sides and summits of their secondary papillæ in long pointed processes, which are immersed in the mucus of the mouth, and may be moved in any direction, although they are generally inclined backwards. These epithelial processes are more stiff according as the particles of which they consist approach more nearly to the dense texture of hair; and a few among them actually enclose minute hairs, pointed at the end, and provided in some cases with an extremely fine central canal. One of the largest found was one tenth of an inch long, and from $\frac{1}{2000}$ to $\frac{1}{3000}$ of an inch thick." Others of the processes have a more or less imbricated arrangement of the epithelial particles, in all of which the imbricated particles tend to coalescence towards the point. Many of the processes may be regarded as soft or uncondensed hairs, and preserve the same thickness for a considerable length.* From the structural peculiarities of these filiform compound papillæ, the thickness of their epithelial covering, the stiff brush-like character of their filamentary productions, together with their greater development in the middle part of the dorsum of the tongue, which part is chiefly employed in the movements of mastication, and least endowed with the function of taste, the authors infer the subservience of these papillæ to the purposes of mastication rather than to the function of taste; whilst the simple papillæ at the base of the tongue, and those covering the circumvallate and fungiform papillæ, being invested by a comparatively thin layer of epithelium, which would readily permit a speedy transudation of sapid substances dissolved in the mucus of the mouth, are doubtless the organs concerned in the sensation of taste, a supposition which receives confirmation from the fact of this kind of simple papillæ being most prevalent in those parts where the sense of taste is most acute, namely, the base, sides, and apex of the tongue.

28. *Function of taste.*—Some precise and interesting conclusions respecting the seat of, and the nerves concerned in, the function of taste, are given by Todd and Bowman, in the same chapter from which the above account of the papillary structure of the tongue has been taken. It seems most probable that the entire dorsal surface of the tongue possesses the property of taste; but especially the circumferential parts, namely, the base, sides, and apex; whilst the central part of the dorsum, in which the sense of taste is feeble, is especially adapted, by the denseness and roughness of its epithelium, (very marked in some animals,) to aid in the comminution and dispersion of the food. The soft palate and its arches, with the surface of the tonsils, also appear to be endowed with taste in various degrees in different individuals; not so the pharynx, gums, or other parts. The above conclusions are warranted by the results both of disease and of careful experiments; and a further consideration of them shows, that since the base of the tongue, which is supplied solely by the glosso-pharyngeal nerve, and the anterior part, which is supplied solely by the lingual branch of the fifth pair, are both endowed with the sense of taste, both these nerves must contribute to the production of this sense; probably a share ought also to be attributed to the palatal branches of the fifth. The tongue is also an exquisite organ of touch, especially the sides and tip of its anterior portion. The question therefore arises whether the senses of touch and taste reside

* The character of these hair-like epithelial processes will be best understood by referring to the admirable illustrations of them given in Todd and Bowman's book; the copious illustrations throughout the work are all most excellent.

in the same papillæ, or in distinct ones, which, since so far as we now know, there is no anatomical distinction between nerve tubules of different endowments, it is impossible to decide; there seems no difficulty, however, in conceiving that a single papilla may receive nerve fibres of different endowments, and thus, in the case of the tongue, one and the same papilla may be subservient to the functions both of touch and of taste.

Several interesting cases have been recorded, which prove that the fifth pair of nerves is concerned in the sensation of taste; one by Todd and Bowman,* in which a middle-aged man suffered for eight years from complete loss of sensation in all parts supplied by the fifth nerve on the left side, with the exception of the forehead. The left eye was lost by destructive inflammation; the tongue was quite without feeling on the left side. His sense of taste was found perfectly absent in the anterior and middle part of the affected side; but not impaired behind, in the region supplied by the glosso-pharyngeal nerve. On the opposite side of the tongue his taste was quite acute in front. Two other cases of paralysis of the fifth pair are related by Mr. James Dixon.† In both, common sensation and the function of taste were unimpaired on the sound side of the tongue; but were both entirely lost on the anterior part of the affected side, whilst posteriorly, where the tongue is supplied by the glosso-pharyngeal, its functions were unimpaired.

29. *Eye.—Movement of the iris.*—Some observations in favour of the view that the movements of the iris are dependent mainly upon the existence of circular and radiated fibres within its structure have been offered by Signor Guarini.‡ Of the existence of muscular fibres (or contractile fibres of some kind) in the iris there can scarcely be doubt, for by these only can the rapidly changing movements of which the iris is susceptible, be explained. The question to be determined is the mode in which these fibres are arranged—whether woven together in all directions, as believed by E. H. Weber, or consisting of two distinct set of fibres, with a definite arrangement, the one circular and disposed like a sphincter muscle around the pupil, the other radiated, and distributed through the rest of the iris; the former set is conceived to contract the pupil, the latter to dilate it. In the latter view the two sets of fibres are supposed to be supplied with nervous influence from two different sources, the circular fibres being supplied by filaments of the third cerebral pair, emerging from the ophthalmic ganglion, the radiated ones by minute branches from the superior pair of cervico-spinal nerves, which enter the first cervical ganglion of the sympathetic, and then, united with the sixth pair of cerebral nerves, pass into the orbit. This view would seem to derive support from the results of several experiments: first, those of Professor Valentin, who found that when the third pair of nerves is divided in a living animal, the pupil dilates; but if the first ganglion of the great sympathetic be removed, it contracts; secondly, those of Guarini, who having extirpated the superior cervical ganglion of an animal, and thus produced contraction of the pupil, administered a poisonous dose of strychnine (the effect of which generally is to dilate the pupil). The pupil of the side operated on dilated but little, for the filaments of the third nerve, now unopposed, maintained its contraction, whilst the pupil on the opposite side was enormously dilated, probably

* L. c. p. 444. † Med. Gaz. July 18; abstract of paper read to the Medico-Chirurg. Society, June 24. ‡ Gaz. Méd. de Paris, April 26, from the Annal. Univers. di Medicina; also translated into the London Med. Gaz. September 19, by Mr. France.

because of the radiated muscle being put strongly into action by the stimulating effects of the strychnine on the spinal cord, and so on the nerve supplying this muscle. This view is supported also by the contraction of the pupil, which results when, in a still irritable body, the third nerve, or the ophthalmic ganglion, be stimulated by pricking, or by galvanism; and by the dilatation which ensues when the superior cervical ganglion is irritated. This latter experiment seems to prove the muscularity of the iris, for, as Guarini observes, no other tissue than the muscular possesses the property of contracting after death upon the application of mechanical or chemical irritation. Guarini endeavours also to prove that venous congestion of the iris, resulting from compression of the vessels interwoven in its structure, by contraction of the muscular fibres tends somewhat to render the contraction of the pupil more complete: thus endeavouring to reconcile the old view, attributing contraction of the pupil to vascular erythism, to that attributing it to muscular action, both of which he considers combine to produce the effect; but in this idea he is justly opposed by Mr. France,* who observes that this venous congestion could not result from contraction of the circular fibres placed around the pupil.

30. *Nerves of the cornea.*—Branches of the ciliary nerves have already been traced into the substance of the cornea; but their distribution has not been minutely described. Professor Purkinje† states that if the cornea be acted upon by acetic acid, it will, after first appearing rather opalescent, become perfectly transparent, and if then examined from within, a rather complex network of nerves will be seen running from the circumference to the centre. None of the filaments seem to be lost in the substance of the cornea, nor to pass into the conjunctiva.

31. *Muscæ volitantes.*—Dr. Mackenzie‡ has contributed a long and elaborate paper on the 'Vision of Objects on and in the Eye,' otherwise on the various kinds of *muscæ volitantes;* and having analysed at length the several opinions of writers on the nature and causes of these spectra, he considers them in the following systematic order:—1. *The muco-lacrymal spectrum*, which is generally invisible to the naked eye, but may be usually seen in the form of dark globules, (capable of being removed, or having their position changed, by nictitation,) when looking through the microscope, or still more distinctly and certainly when viewing a candle, placed at some twenty feet distant, through a deep concave lens. This spectrum is the result of each globule of the muco-lacrymal secretion lying on the cornea, acting on the small pencil of divergent light thus allowed to fall upon it, which it converges sufficiently as (together with the refraction of the transparent media of the eye) to bring it to a focus on the retina, where are consequently produced as many multiplications of the image of the candle as there are globules.—2. *Spectra depending on corpuscles between the cornea and vitreous humour.* These also are ordinarily invisible to the naked eye; but their presence may be detected by the same method as was indicated for the muco-lacrymal spectrum, from which they may be distinguished by not suffering displacement on nictitation, by occupying a posterior plane in the field of view, and by the double images which these corpuscles form on exposing the eye to two divergent beams of light, (as in Sir David Brewster's experiment with two candles,) being less separated from one another than the double images of the muco-lacrymal spectrum. From corpuscles residing in the vitreous humour they will be distinguished

* Med. Gaz. Sept. 19. † Muller's Archiv, Heft 4, 1845; also translated by Dr. Gull, in London Med. Gaz. Oct. 31, 1845. ‡ Edin. Med. and Surg. Journ. July.

by their occupying an anterior plane in the field of view, by their double images being more widely separated, and by the possibility of readily inverting their spectrum by simply carrying forward the convex lens (through which the candle is being viewed in the experiment) from the eye, so that the cornea is no longer within the focal distance of the lens. In this latter circumstance it would seem that if, by shifting the focus of the rays which impinge on the retina, we find that the corpuscles (the situation of which is the object of investigation) are at one time anterior and at another posterior to that focus, and their spectrum thereby inverted; this proves that they are situated in the anterior part of the eye; whereas if the spectrum cannot be thus inverted, the cause must reside in the vitreous humour.

3. *Spectra depending on corpuscles in or behind the vitreous humour.* These are of four different kinds, and may be seen by looking at the sky through a pin-hole aperture in a card, or more distinctly by looking at the flame of a candle, two or three feet distant, through the eye-glass of a compound microscope. In this last experiment "four sets of spectra will be seen, independent of the muco-lacrymal spectrum. The most remarkable one appears nearest to the eye, and consist of twisted strings of minute pearly globules hung across the field of view: this I shall call the *pearly spectrum.* These strings are of various forms and lengths; they also vary in number, sometimes existing in such large quantity as to be troublesome in ordinary vision, giving rise to another form of muscæ volitantes, which appear usually as a thin cloud, somewhat like the wing of a fly, or as semi-opaque threads, like a spider's web, or of blackish soot-like particles, dancing before the eyes. Sometimes the threads terminate in a kind of bulb. The pearl-like globules, of which the threads are composed, vary in size, and seemed joined together merely by apposition, without being contained in a tube.* The second in point of remarkableness, and the farthest from the eye, consist of watery-like threads, destitute of any globular appearance, and depending chiefly from the upper part of the field, easily seen at the lower part: this I call the *watery* spectrum, merely from its appearance, for I have ascertained neither its seat nor its nature. The depending threads of which this spectrum consist have a somewhat rounded appearance, differing in this respect from the pearly muscæ, the threads of which seem flat. Each of the watery threads is bounded by two dark lines, within which there is a broad space, which is clear and entirely destitute of anything like globules. These watery threads measure fully twice the diameter of the threads of the pearly spectrum. They are generally six or eight in number, not all situated in the same plane. Their general course is vertical, and generally flexuous: they often divide, at their lower extremity, into two or more branches, which seem to melt away insensibly. They have so much

* Dr. Mackenzie enters very minutely into the subject of the probable seat and cause of the pearly spectrum, and after analysing at length the opinions of the various writers who have regarded the pearly corpuscles as situated on the surface of the cornea, within the aqueous humour, the imagined humour of Mongagni, the vitreous humour, the space between the hyaloid membrane and the retina, the retina and the choroid, he concludes that in all probability the vitreous humour is their seat, (which view is also entertained by Dr. Jago, as mentioned in our last Report, and by others). What the cause may be is still obscure; Dr. Mackenzie inclines to the notion that the contracted (or probably obliterated) capsular arteries which traverse the vitreous humour may contain arrested blood-globules, and so give rise to the appearance which the pearly spectrum presents; whilst Dr. Jago (London Med. Gaz. May 16, 1845) seems to regard them as caused by fringes or processes of the hyaloid membrane, or deposits within this membrane.

the appearance which streams of tears, flowing over the cornea, might be supposed to present, that they might be readily mistaken for them, but from their lying in a plane posterior to the muco-lacrymal spectrum. At first sight they seem to slide down slowly from the upper to the middle part of the field of view; but they possess neither the extent nor the quickness of motion of the pearly spectrum. Any bending or extending which they undergo in the movements of the eye are slight, and although seemingly displaced and broken into fragments by nictitation, they are not really so. This watery spectrum sometimes becomes much exaggerated, and then produces the sensation of muscæ volitantes in ordinary vision. It is frequently compared to the appearance of threads of spun glass, laid across each other, or to that of a fine lock of wool, and occasionally, by one or two forcible acts of nictitation, they may be dispersed. In two distinct planes between the *watery* and *pearly* spectrum are placed two sets of insulated globules, which I call the *insulo-globular* spectra. The globules composing the set farthest from the eye are hazy and ill-defined, and may be compared to small grains of sago; those nearest to the eye are clear in the centre, exterior to which they present a sharp black ring, and still more exteriorly, a lucid circumference. The above four sets of spectra never mingle with one another, so as to change the order in which they stand before the eye; but the pearly spectrum always appears the nearest; then the sharply-defined insulo-globular; then the obscurely-defined globules; and, farthest away, the watery threads. That the corpuscles which produce these four sets of spectra are situated in or within the vitreous, and not, as Donné* supposed, in the aqueous humour, is manifest from the fact that none of these spectra can be inverted by viewing them through a concave lens, or by first viewing them through a convex lens held close to the eye, and then carrying the lens forwards from the eye, so that the eye is beyond the focal distance of the lens, experiments which at once invert the muco-lacrymal spectrum, and would, it is presumed, do the same to any spectrum depending on the state of the aqueous humour of the crystalline." 4. The next variety of spectrum Dr. Mackenzie describes is the *circulatory* one. It is frequently observed after sneezing, coughing, or any kind of straining, especially when performed with the eyes open, and appears in the form of numberless minute lucid points, darting about in all directions, an effect which Dr. Mackenzie thinks may probably be due to the passage of blood-corpuscles through the vessels of the choroid. 5. His last variety is the *vascular* spectrum, a term applied to certain fixed muscæ, as those produced in Purkinje's well-known experiment, in which the blood-vessels and central spot of the retina are brought into view, as also the numerous class of phenomena known by the names of *accidental colours* and *ocular spectra*.

32. *Inability to distinguish colours.*—In a paper on this subject, Dr. Pliny Earle† mentions, amongst the "peculiarities hitherto unnoticed," that the power of accurately distinguishing colours varies at different times in the same individual, and that the inability to distinguish colours is not unfrequently connected with or accompanied by a defective power of discriminating between musical notes.

* Archives Gén. de Méd. t. xxiii, p. 115.

† American Journ. of Med. Sciences, April 1845.

§ VIII.—*Menstruation.*

33. *Periods of the occurrence and cessation of the menses.*—On the subject of menstruation Dr. Guy* has furnished some valuable and additional information respecting the periods at which this function commences and ceases amongst females in England. From observations on 1500 cases, he found that the greater number of females first menstruated at the age of 15:† "the fourteenth year came next in order, then the sixteenth, while the number at 13 and 17, at 12 and 18, and at 11 and 19, approximated very closely to each other. Before the 11th, and after the 19th year, the numbers were very small. In more than half the cases the menses made their first appearance at 14, 15, and 16 years of age. The earliest period was 8 years, and the latest 25." With regard to the period at which menstruation ceases, he deduced from the results of 400 cases, that the cessation may occur (indcpendent of disease) at any period from the 27th to the 57th year: in the majority of cases it occurs in the interval from 40 to 50 years of age, the number from 45 to 50 being greater than that from 40 to 45. [At Lyons M. Raciborski found the average age at which menstruation ceases, to be between 45 and 50: at the Saltpêtrière, in 100 women, the average age was 46·03: at Warsaw 47·05: at Christiana 48·07.‡ These results agree satisfactorily with those obtained by Dr. Guy.] The period during which the habit of menstruation continues, varies with the time of its first appearance, and, as a general rule, the earlier it commences the longer it lasts, (a circumstance noticed by Raciborski.) Dr. Guy mentions two cases which afford additional evidence of the possibility of menstruation recurring regularly during the whole period of lactation, and another case where menstruation occurred regularly during both pregnancy and lactation.

From calculations founded on 310 cases, Mr. Roberton § finds that amongst Hindoo women, the average age for the arrival of puberty is 12 years and 8 months, which is earlier by 2 years and 2 months than the period for the occurrence of puberty in England; this circumstance, however, he considers not sufficient to justify the inference, that the early period noticed is referrible to the heat of the climate of India, because in some countries where the constant temperature is higher than in India, menstruation does not occur till a later period.

From numerous researches into the laws regulating the periodicity of healthy and diseased phenomena in the animal system, Dr. Schweig‖ found that the average interval between successive returns of the menstrual period was as nearly as possible 28 days; the average in 500 times being 27 days and 56 hours.¶

* Med. Times, August 9, 1845. † [This corresponds closely with the observations of Mr. Roberton, who, from 2169 cases, calculated that the average age of puberty or of the first appearance of menstruation in England is 14 years and 10 months. Among females in the east of France the researches of M. Petrequin (British and Foreign Med. Rev. July 1845, p. 138) led him to the conclusion that one half begin to menstruate between the ages of 13 and 15. Not very definite.] ‡ Paget's Report in British and Foreign Med. Rev. Jan. 1844; M. Petrequin (l. c. p. 138) found that in the east of France fecundity ceases between 45 and 50 in about one half of the entire number of women, and between 40 and 50 in about three fourths.

§ Edin. Med. and Surg. Journ. Oct. 1845. Also in London Med. Gaz. Oct. 24, 1845.

‖ Gaz. Méd. 2 Août 1845; from Roser and Wunderlich's Archiv, 1845. ¶ For some valuable observations on the periodicity attending vital phenomena I may refer to a series of excellent papers by Dr. Laycock in the Lancet, vol. i, 1842-3; also to his work "on the Nervous Diseases of Women," where the whole subject of menstruation is lucidly treated.

34. *Premature menstruation.*—A case of this kind is mentioned by Mr. Whitmore, of Cheltenham,* in which a discharge analogous to the menstrual one occurred a few days after birth, and returned regularly every three weeks, lasting for two or three days, until the child attained the age of four years, when it died, after an illness of forty-eight hours' duration. Its great development, as observed after death, was very striking, equalling that of a girl ten or eleven years of age. The mammæ were large, the mons veneris covered with hair, as also sparingly were the labia pudendi, which were much enlarged. The development of the pelvis, deep-seated genitals, and lower limbs, was very considerable. [It would have been interesting had the condition of the ovaries been stated.]

35. *Recurrence of menstruation at an advanced age.*—MM. Murynck and Kluysens† relate the particulars of two cases in which menstruation recurred after the lapse of several years from its cessation, and continued to an advanced period of life. The subjects of both cases were nuns. In one menstruation had ceased at the age of 52, and recurred at the age of 62, and continued, when the case was recorded, at the age of 73, with perfect regularity. What is curious, the patient was attacked on the cessation of her menstrual discharge with gastralgia, which persisted in spite of various remedies, until the recurrence of the discharge, when it left her, and her health again became perfect. In the second case, the menstrual discharge ceased at the age of 52 also: it recurred at the age of 60, and has continued up to the date of the report, when the patient was 90 years of age. This patient was attacked on the cessation of menstruation with violent colics, followed by tic douloureux, which resisted all treatment, but ceased on the recurrence of the menstrual discharge, and the patient, at the age of 90, was in the enjoyment of health, with all her faculties perfect, and with the tastes and ideas belonging to youth.

36. *Vicarious menstruation.*—A case has been recorded‡ in which a periodic discharge of blood from the ear occurred vicarious of menstruation; the discharge was preceded by a sense of weight in the head and noise in the ears, especially in the one from which the flow of blood took place. Another case is mentioned,§ in which a periodic discharge of blood, corresponding with the menstrual period, took place from an ulcer on the arm. A case of vicarious menstruation, which proved fatal, has also been recorded.‖

* Northern Journ. of Med. July 1845. † Amer. Journ. Med. Sciences, July, p. 172.
‡ Bulletin des Acad. Juillet 1845, p. 174. § London Med. Gaz. Aug. 1, 1845, p. 610.
‖ London Med. Gaz. Aug. 8, 1845, p. 657. Much has been written within the last six months on the subject of menstruation generally, but especially in regard to its analogy with the rut of animals, although very little which can be regarded as new has been contributed. It will, therefore, be sufficient merely to refer to the following amongst other communications: an excellent series of papers on the Physiology of the Human Ovary, by Dr. Ritchie, in the London Medical Gazette, commencing May 19, 1845; an Exposition of M. Bouchut's work on Generation, containing a few comments thereon, by M. Mandl, in Archives Générales de Médecine, Mai 1845; an interesting paper on the Human Female Ovary, by Dr. Renaud, reprinted from the Monthly Journal of Medical Science, Aug. 1845; a critique on the Modern Theory of Menstruation, by a Reviewer in the Medico-Chirurg. Review, Oct. 1845, p. 525; and a Letter in the Gazette Médicale, Aug. 16, 1845, by M. Jules Béclard, who makes numerous objections to the conclusions derived from the excellent researches of M. Bischoff, whose work M. Béclard seems only partially to have read, otherwise, as remarked by M. Vogt, in Gazette Médicale, Aug. 23, he would have met with a direct answer to his objections. On the subject of corpora lutea, about which also much has been written, especially by Drs. Ritchie and Renaud in the papers above referred to, nothing essentially novel has been advanced.

§ IX.—*Miscellaneous Subjects.*

37. *Molecular movement in cells.*—Mr. Addison* has added further evidence of the existence of molecular movements of the granules contained in the white corpuscles of blood, in pus, and in mucus corpuscles, and he thinks that the circumstance of this molecular movement being common to the granules in each of these corpuscles is strongly in favour of his view, that the cells of mucus, pus, and lymph, are identical with the colourless corpuscles of the blood, or at least are altered forms of these corpuscles.

38. *Growth and development of the epidermis.*—Mr. Erasmus Wilson† adduces evidence, derived from his microscopic observations, in confirmation of the commonly-received doctrine respecting the origin of the cells of the epidermis and epithelium generally, from the materials furnished by the liquor sanguinis or plasma of the blood: which fluid passing by endosmosis through the walls of the capillary vessels and peripheral boundary of the surface, developes granules by a vital process, analogous to coagulation. On a careful examination of the inner surface of the epidermis with the aid of the microscope, he finds it to be composed of four kinds of elements, arranged in such a manner as to constitute an irregular plane, similar to a tesselated or mosaic pavement. These elements are: 1. *Granules*, which the author terms *primitive*, of a globular form, solid, and apparently homogeneous, and measuring about 1-20,000th of an inch in diameter. 2. *Aggregated granules*, having about double the diameter of the former, and apparently composed of as many of these as can be aggregated together without leaving an unoccupied space in the centre of the mass. 3. *Nucleated granules*, measuring in diameter from 1-6000th to 1-4000th of an inch, each being composed of an aggregated granule as a nucleus, enveloped by a single layer of aggregated granules, giving to the whole mass an oval or circular, and at the same time flattened, shape. Their constituent granules have acquired during this aggregation greater density, and are separated from each other by distinct interstitial spaces filled with a transparent homogeneous substance. 4. *Nucleolo-nucleolated cells* pervading the deep stratum of the epidermis, and which, in their long diameter, measure from 1-3000th to 1-2500th of an inch. These cells, which constitute the principal portion, and may be regarded as the chief constituent of the epidermis, are formed from the nucleolated granules, on the exterior of which there is superposed a transparent layer, bounded by a well-defined outline; the nucleolated granule being the nucleus, and the aggregated granule the nucleolus of these primitive cells of the epidermis. The author is of opinion that the nuclei, up to a certain point, grow with the cells by the separation of the original granules from the deposition between them of interstitial matter, and also by the cleavage of the latter, and the consequent multiplication of the granules. This peripheral growth of the cells is totally different from the mode of growth described by Schwann, and explains the disappearance of the nucleus in the scales of the epidermis. The observations of the author lead him to believe that the same process of development and of growth is followed in the epithelium as in the epidermis; and he offers evidence, showing that similar arrangements take place in the cells of melanosis, in the pigment cells of the choroid membrane of the eye, and in those of the skin of the negro.

* The actual process of Nutrition, &c. 1845, p. 13. † In a paper read before the Royal Society, June 19, 1845, the above abstract of which is taken from the Magazine of Natural History, Aug. p. 133.

39. *Frontal sinuses.*—Sir W. Hamilton* has offered some interesting observations on the peculiarities of these sinuses, chiefly with the view of showing that the doctrines of the phrenologists (so far as they bear upon these sinuses) are irreconcilable with the facts of nature. Without entering into the views of the phrenologists on this question, it will be sufficient to notice the facts stated by Sir W. Hamilton. These facts are: 1. "The frontal sinus only exists in consequence of the recession of the two cranial tables from their parallelism, and as this recession is inappreciable, consequently no indication is afforded by the external plate, of the eminence or depression of the brain, in contact with the internal. 2. There is no correlation between the existence and extent of a sinus, and the existence and extent of any external elevation, whether superciliary or glabellar; either may be present without the other, and when both are coexistent, they hold no reciprocal proportion in dimension or figure, neither is there any form whatever of cranial development which guarantees either the absence or presence of a subjacent cavity. 3. The sinuses are rarely if ever wanting in any healthy adult head of either sex. [Out of upwards of 300 crania which he examined he could not find one in which the sinus was completely absent.] 4. Although the sinus is always regularly present, yet it varies much in its extent, for whilst on the average it affects six or seven phrenological organs, it is however impossible to determine whether it be confined to one, or extended to some seventeen of these."

40. *Form and measurement of the head.*—Dr. Knox† has published some interesting results of the measurements of skulls of various nations. There is also a long paper on the general form of the head amongst northern nations, by Dr. A. Retzius.‡

41. *Use of Glisson's capsule.*—M. Petrequin § suggests what seems a probable explanation of at least part of the purpose served by that continuation of the *tunica propria* of the liver to which the name of *Glisson's capsule* is applied, and which accompanies the branches of the portal vein, hepatic artery, and biliary duct, along their ramifications through the substance of the liver. He regards it as destined to facilitate the portal circulation, explaining his view in the following manner. The liver is a compact organ, not readily admitting of being distended; there is no heart to impel the blood through the vena portæ, nor are there any valves to sustain the column of blood in it; the capacity of this vein is also greater than that of the mesenteric artery to which it corresponds, and it is one of the vessels whose caliber is most variable, because, from its relation to the digestive organs, it must admit of dilatation when fluids are absorbed, and be enabled to contract when those fluids have passed off. These various obstacles to the portal circulation are counteracted, and the power of accommodating the capacity of the vessel to its contents is insured by its running in a fibrous sheath, and being quite independent of the tissue of the liver: it can dilate or contract as the quantity of fluid traversing it increases or diminishes, and it can also contract so as to press on the blood it contains, and thus favour its circulation.

42. *Weight of the spleen.*—The absolute weight of the spleen, and its weight in proportion to that of the whole body, according to Huschke,‖ increases rapidly after birth; and its proportionate weight soon attains its highest standard, so that in the adult it has no decidedly greater proportion

* Med. Times, May 31, June 7, 1845. † Ib. May 3, 1845. ‡ Muller's Archiv, Heft 2-3, 1845. § British and Foreign Med. Rev. July 1845, p. 136.

‖ British and Foreign Med. Rev. Oct. 1845, p. 420.

to the body than it has after birth, in some cases it even decreases. It varies between 1·235 and 1·240. But its relation to the weight of the liver is proportionately greater in the adult than in the infant.

43. *Anatomical peculiarities of children.*—The following observations by M. Bery, physician to the Stockholm Asylum for Orphans, on some peculiarities in the anatomical condition of the tissues in the early period of life, are translated in the Lancet.* M. Bery has found that the caliber of the capillary vessels is much greater in children than in adults: this he ascertained to be the case in various viscera, such as the lungs, liver, kidneys, intestinal canal, skin, &c. The same remarks apply to the meshes of the cellular tissue and to the follicles of the intestines. These anatomical peculiarities explain the rapidity and abundance of the secretions which are observed in infancy, and are rendered imperative by the activity of the general nutrition at that age. On the other hand, this development of the capillary vessels of the meshes of the cellular tissue and of the mucous follicles, readily explains the rapidity of the formation of false membranes, the abundance and tenacity of the various mucous and cutaneous discharges, and the frequency of inflammations. At the same time that the capacity of the tissues renders their engorgement easy, it also renders their disorganization slower; consequently the pathological lesions found after death are not so marked in children as in adults.

* Aug. 2, 1845.

V.

REPORT ON THE PROGRESS OF PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY.

BY GEORGE EDWARD DAY, M.A. L.M. CANTAB.

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§ I.—*Heat.*

1. *Animal heat.*—In our last Report we omitted to notice a valuable paper by Liebig,* "On Animal Heat," because it was an essay that seemed likely to lead to considerable discussion. We now present it to our readers, with a brief notice of the arguments that have been brought forward against it.

"It is a very commonly prevailing opinion, that if we determine the amount of oxygen consumed in a given time in the respiratory process of an animal, and calculate how much heat this amount of oxygen would have evolved had it combined directly with carbon and with hydrogen in ordinary combustion, forming carbonic acid and water, and then further compare the result of these calculations with the amount of heat actually evolved by the animal during the same period, we shall find a considerable disparity.

"Let us assume the amount of heat given out by an animal in a certain time to be = 100, then, according to the experiments of Dulong and Despretz, the oxygen consumed by the animal in the same time would, if combined directly with carbon and with hydrogen, as in ordinary combustion, have evolved—

	Min.		Max.
"According to Dulong, only from .	69	to	80
"According to Despretz, only from .	74	to	90

"According to these calculations it would follow that the animal body evolves from one tenth to two tenths more caloric than it ought, assuming that the combination of the oxygen with certain constituents of the body (forming carbonic acid and water) is the exclusive source of the liberated heat.

"The results of the experiments and calculations of Dulong and Despretz have induced physiologists, and also many chemists, to suppose that there exists some other source of heat in the animal organism, which lends its aid to the inspired oxygen in maintaining the temperature of the living body.

"I shall endeavour to prove in this paper that this assumption of a source of animal heat, which cannot be accounted for by any known physical law, is opposed to the most positive and well-established facts; and, moreover,

* Annalen der Chemie und Pharmacie, No. 1, 1845. This paper has been translated in the September number of the Chemist, and in the Lancet for February. We have adopted the latter with a few trifling alterations.

I shall show that the amount of heat evolved by an animal in a given time, corresponds exactly with that which the oxygen consumed in the respiratory process during that time, would produce if it had combined directly with carbon and hydrogen, as in ordinary combustion.

"We possess a very simple method of determining the number of degrees of heat imparted to a definite and known amount of water by the combustion of any definite weight of carbon and hydrogen,—in other words, the combination of a definite amount of oxygen with carbon and hydrogen, forming carbonic acid and water. By the same method we may readily ascertain the amount of heat evolved by an animal, and we may hence calculate whether or not it be all derived from the oxygen inspired, and the formation of carbonic acid and water.

"This method of determining the amount of heat evolved by a body in combustion consists simply in burning it—having first ascertained and noted its exact weight—in a metallic vessel, surrounded on all sides by a definite and known weight of water, the temperature of which is also ascertained and noted.

"After the combustion has been completed, the temperature of the water and of the vessel is again determined, and the increase which it is found to have received shows at once the amount of heat evolved by the combustion of the substance. The amount of heat evolved by an animal in a given time may be ascertained by an exactly analogous proceeding. For this purpose the animal is made to stand in a metal vessel, surrounded by a known weight of water, the exact temperature of which is likewise known. The number of degrees of heat imparted to the water in a given time may be readily ascertained, with the greatest possible correctness, and so may the amount of carbonic acid exhaled by the animal in the same space of time, as well as the total amount of oxygen which the air has lost, including the amount of oxygen consumed without entering into the formation of carbonic acid. And this is all that it is necessary to express by figures—how many degrees of heat are produced in the animal organism and evolved from it in a given time, by the conversion of the inspired oxygen into carbonic acid and water, since, by the direct determination of the combustion heat of carbon and of hydrogen, we know exactly how many degrees of heat correspond to a certain and definite amount or volume of carbonic acid produced, as well as how many degrees of heat are evolved in the conversion of a certain and definite amount of oxygen into water. If we combine carbon and hydrogen, in an appropriate apparatus, with oxygen, we know that a certain amount of heat is evolved and imparted to the surrounding objects. Now, the question simply is this, whether a given amount of carbon and of hydrogen yields, in its *direct* combustion, *more* or *less* heat than in its *indirect* combustion in the animal organism? The experiments of Dulong and Despretz answer the latter question in the affirmative, since, according to them, a given amount of carbon and hydrogen yields from one tenth to two tenths more heat in the indirect conversion of these substances into carbonic acid and water, in the animal organism, than would be evolved by their direct combustion.

"The apparatus used for the determination of animal heat are, in the principle of their construction, identical with those used for the determination of combustion heat, and thus we may assume that the one offers as many and as few sources of error as the other; it is therefore by no means astonishing that so much weight and importance should have been attached to Dulong and Despretz' experiments.

"I feel far from inclined to depreciate, in the slightest degree, the value

and importance which these experiments necessarily deserve as the results of positive experience, but I think I am justified in considering it rather hasty and precipitate to infer from these results the existence of an additional source of heat, quite unconnected with any of those sources which our physical and chemical experiments in the formation and evolution of heat have led us to assume. For before we can properly arrive at such an inference—i. e., the assumption of this new and unknown source of heat—there are a great many questions to be answered, respecting the premises upon which it is based.

"It is evident, that if the number of degrees of heat evolved by the *direct* combination of a given volume of oxygen with carbon and with hydrogen, forming carbonic acid and water, is *smaller* than the amount of heat which the same volume of oxygen evolves when combining *indirectly* in the animal organism, with carbon forming carbonic acid, or with hydrogen forming water, the first and most obvious inference would be this, that the amount of heat which a compound containing carbon and hydrogen (a constituent of the animal body) evolves in its oxidation—i. e., in its transformation into carbonic acid and water, is *greater* than the amount of heat liberated in the combustion of carbon or hydrogen *per se*—i. e, in their elementary state. If against this it were proved that the amount of heat evolved by the combustion of an animal compound is *equal* to, or *not larger* than the amount of heat evolved by the oxidation of the combustible constituents of this compound, it is obvious that the second inference to be drawn from the results of Dulong and Despretz' experiments ought to be, that there must exist some error with regard to the assumed amount of the combustion heat of carbon and of hydrogen, upon which both these chemists based their calculations.

"Both these inferences may properly be applied and used in a critical examination of Dulong and Despretz' experiments. Dulong based his calculation of the amount of heat evolved by the conversion of the inspired oxygen into carbonic acid and water, in the respiratory process, upon the data of Lavoisier and Laplace; according to which, one gramme of hydrogen, upon its combustion into water, converts 285 grammes of ice of 0° centigrade into a corresponding amount of fluid water of 0°, and one gramme of carbon converts 96·5 of ice of 0° into an equivalent amount of fluid water of 0°.*

"Now, since at the time when Lavoisier and Laplace made their experiments, it was assumed that in the melting of a given weight of ice as much heat is absorbed as is contained in an equal weight of water of 75°, it is evident that the melting of 285 parts of ice would require as much heat as 285 parts of water at 75° contain—i. e., $285 \times 75° = 21375°$ of heat; in like manner, the combustion heat of one gramme† of carbon, according to Lavoisier and Laplace, is calculated as $96{\cdot}5 \times 75° = 7237{\cdot}5$. Now one litre (= 1000 cubic centimetres) of carbonic acid contains 0·5404 grammes of carbon, and this amount of carbon, upon its combustion into carbonic acid, evolves 3911·45 of heat—i. e., the amount of heat required to raise by one degree the temperature of 3911·45 grammes of water; Dulong, therefore, in his experiments, could easily find, from the number of cubic centimetres of carbonic acid gas present in the air exhaled by the animal, the number of degrees of heat which ought to have been imparted to the surrounding water by the formation of this carbonic acid. One litre of oxygen (= 1·4410 grammes) combines with two litres of hydrogen,

* The heat is here invariably calculated on the centigrade scale.

† The gramme equals 15·4 grains.

(= 0·1802 grammes,) forming water, and in this process 3851° of heat are liberated, according to Lavoisier and Laplace. It is obvious that 1000 cubic centimetres of oxygen consumed in the respiratory process correspond to 3851° of heat evolved, if we assume this amount of oxygen to have entered into combination with hydrogen, forming water.

"These were the data which guided Dulong in calculating the results of his experiments. With respect to his supposition—viz. that that portion of the oxygen which is absorbed in the respiratory process, without forming subsequently carbonic acid, combines with hydrogen, forming water—this is not open to any objection or doubt, since the organism, besides carbon and hydrogen, and a very minute proportion of sulphur, contains no other element capable of combining with oxygen.

"At present we know most positively, that these data of Lavoisier and Laplace, based as they were upon the latent heat of water assumed at that time, are erroneous, since this latent heat, according to the most recent researches of Regnault, confirmed by Provostaye, is not 75°, but 79°; that is, four degrees more for every pound of melted ice. This makes for every gramme of hydrogen, 1140°, and for every gramme of carbon, 386° of heat more than originally assumed, according to Lavoisier and Laplace's calculations.

"It is obvious, therefore, that the figures by which Dulong, in his experiments, expresses the amount of heat produced in the respiratory process in consequence of the formation of carbonic acid and of water, must be corrected according to the more recent determination of the latent heat of water, and thus that they ought to be raised 1-19th.

"Despretz based his calculations on animal heat upon the results obtained by himself in the determination of combustion heat: he found one gramme of carbon to evolve 7815° of heat, and one gramme of hydrogen to evolve 23640° of heat. In subsequent experiments* he assigns to the combustion heat of carbon 7912°, and to that of hydrogen 20624°. With regard to the latter, it differs so much from the results of his former experiments, as well as from the results obtained by Lavoisier, that we cannot admit it to be correct. With regard to the combustion heat of carbon, the figure 7912 comes as near to the corrected results of Lavoisier (7237 + 386 = 7623) as can be expected and desired in experiments of this kind.

"Among the papers left by the late M. Dulong, were found certain results which this chemist had obtained in the direct determination of the combustion heat of carbon and of hydrogen.† These results seem to bring the question concerning the origin of animal heat as near its solution as possible.

"Dulong found that one litre of hydrogen at 0° and 0·76′ pressure upon combustion yields the following amounts of heat—

3120; 3118; 3108; 3111·3; 3075.

One litre of oxygen accordingly evolves, upon its combination with two litres of hydrogen forming water, the following amounts of heat—

6240; 6236; 6216; 6222·6; 6150;

and thus the amount of heat evolved by the combination of one equivalent by weight of hydrogen may be calculated at 34734°; the difference between this figure and that of Lavoisier and Laplace, (21375,) upon which Dulong based his calculations respecting animal heat, is exceedingly great; if we assume 34734° to be the *correct* figure, it is obvious

* Annales de Chemie et de Physique, 2 série, t. xxxvii, p. 180.

† Comptes Rendus, t. viii, p. 871.

that the number of degrees of heat liberated in consequence of the formation of water, must in his calculations be assumed at 2362° higher for every litre of oxygen consumed in the formation of water.

"Now, the correctness of this figure can no longer be doubted, since Dulong's data have been subsequently examined and confirmed by Hess. Hess found in his experiments that one litre of hydrogen of 0° and 0·76′ pressure, yields on an average 3114 of heat, and this number corresponds with the average amount of heat found by Dulong, as stated above. I have to add here, *en passant*, that this figure is still somewhat below that found by Crawford. We may therefore assume, from the corresponding results of all these experiments, that one gramme of hydrogen evolves in its combination with oxygen from 34743 to 34792 degrees of heat.

"With regard to the combustion heat of carbon we are far from knowing it so positively as that of hydrogen.

"Pure carbon (diamond) has never been employed for this purpose. Dulong used wood-coal, Despretz the coal of sugar heated to whiteness—neither of these can be considered as pure carbon. The wood-coal contains ashes, and, moreover, varying amounts of oxygen and hydrogen: the coal of sugar, though far purer, yet contains, according to Marchand and Erdmann, after having been heated to whiteness, still 0·6 per cent. of hydrogen, and 3·1 per cent. of oxygen; and even after having been exposed anew to a blast fire, it retains still 0·2 per cent. of hydrogen and 0·5 of oxygen. The difficult inflammability of those sorts of coal which are to a certain degree pure, forms also a great obstacle to the determination of the combustion heat of carbon. The coal must not be heated to ignition within the apparatus destined for the reception of the heat evolved, and when heated to redness previously to its being placed in the apparatus, part of it is consumed ere it reaches its destination. All the determinations of the combustion heat of carbon are therefore only approximate, and the resulting figures are at all events smaller than they ought to be, and would be, were it not for these obstacles and difficulties.

"According to Despretz, the combustion heat of carbon is 7912°.

"According to Dulong's former experiments, in which he used an impure carbon—i. e., wood-coal—this amount is smaller: in his most recent experiments the combustion heat of carbon is calculated upon one litre of coal-vapour. He found in four experiments

8009; 7540; 8040; 7843 degrees of heat; on an average, 7858.

"It is well known that chemists do not agree with respect to the exact weight of a litre of coal vapour; the amount of carbon contained in one litre of carbonic acid gas is 0·5404 grammes. Now, if we assume, with Berzelius, and the majority of German chemists, that this amount of carbon expresses the weight of half a litre of carbon vapour, we find the weight of a litre of carbon vapour to be 1·0808 grammes, and this 1·0808 will in that case correspond to 7858 degrees of heat, as given by Dulong. Most of the French chemists assume the amount of carbon contained in a litre of carbonic acid to express the weight of a whole litre of carbon vapour, and it is now, after Dulong's death, hardly possible to decide whether the number of degrees of heat which, according to him, correspond to a litre of carbon vapour in combustion, refer to 0·5404 grammes, or 1·0808 grammes of carbon. If we take the latter figure as the weight of a litre of carbon vapour, we find the combustion heat of one equivalent by weight of carbon to be 7270°, whilst with the former we should obtain 14540° as the result. In the one case Dulong's determination approaches to those of Lavoisier, Laplace, and Despretz; whilst in the other case the amount of the combustion heat of charcoal would appear vastly higher than that

which those chemists have assigned to it. It seems, however, evident, from Dulong's determinations of the combustion heat of several compounds containing carbon and hydrogen, such as olefiant gas, ether, and alcohol, that the combustion heat of carbon is, at all events, higher than 7270—i. e., the result obtained by Dulong by the direct combustion of charcoal.

"We have every reason to believe that the amount of heat evolved by the combustion of a substance composed of several combustible elements, cannot exceed that evolved by the combustion of an equal weight of these combustible elements, *per se*—that is, in their elementary state, since we may reasonably presuppose that the formation of the combustible compound—i. e., the combination of these elements, has already given rise to the evolution of a certain amount of heat. Now, with the single exception of marsh gas—(and this is not entitled to much weight, as we possess no method of preparing pure marsh gas)—the combustion of all the carbon compounds which have hitherto been submitted to this operation indicates a far higher degree of heat, evolved by the combustion of carbon, than 7270.

"I will not attach any importance to the results which Dulong obtained by the combustion of cyanogen gas—(although perhaps they may, after all, be the most correct)—since in Dulong's experiments on this subject, a non-ascertained amount of nitrous acid was formed during the operation; but the results obtained by the same chemist in the combustion of olefiant gas, of alcohol, and of ether, correspond so admirably with each other, that I think the determination of the combustion heat of carbon may be based upon them with far greater safety than upon results obtained by any other method.

"It would, indeed, be very difficult to point out any substances better adapted for this purpose than olefiant gas, alcohol, and ether. One litre of alcohol-vapour contains the elements of one litre of olefiant gas and of half a litre of water-vapour; half a litre of ether-vapour contains one litre of olefiant gas and the elements of a quarter of a litre of water-vapour. The elements of the latter, of course, do not participate in the combustion.

"Now, upon the supposition that 1·0808 grammes of carbon—which in olefiant gas, ether-vapour, and alcohol-vapour, are combined with two litres of hydrogen—express the exact weight of one litre of carbon-vapour, it is evident that the figures resulting from Dulong's experiments, to ascertain the amount of heat evolved by the combustion of a litre of olefiant gas, alcohol-vapour, and ether-vapour, are indicative of the sum total of the amount of heat evolved by the combustion of two litres of hydrogen and one litre of carbon-vapour. Consequently, if from this sum total we subtract the known amount of heat evolved by the combustion of two litres of hydrogen gas, the remainder will indicate the exact amount of heat evolved by the combustion of one litre of carbon-vapour.

"The following were the results of Dulong's experiments. Olefiant gas yielded in five experiments—

15264 ; 15298 ; 15576 ; 15051 ; 15501	degrees of heat.		
On an average	15338	„	„
One litre of alcohol-vapour yielded	14375	„	„
Half a litre of ether-vapour yielded	16674	„	„

I have already stated above that one litre of alcohol-vapour, as well as half a litre of ether-vapour, contain the elements of one litre of olefiant gas.

"The mean of these three figures is 15462.

"Let us suppose, therefore, 15462 degrees of heat to express the amount of heat evolved by the combustion of one litre of olefiant gas, and subtract from this the known amount of heat evolved by the combustion of two litres of hydrogen gas.

Combustion heat of one litre of olefiant gas = 15462
„ „ two litres of hydrogen gas = 6213

there remains 9249

as the amount of heat evolved by the combnstion of one litre of carbon-vapour, or of 1·0808 grammes of carbon.

"Accordingly, the amount of heat evolved by the combustion of one gramme of carbon will be from 8557 to 8558.

"It is true, indeed, that the direct combustion of isolated carbon seems to have yielded hitherto invariably an amount of heat inferior to this; if we take into consideration the circumstance, however, that the isolated combustion of the elements hydrogen and carbon, is liable to twice as many possible errors of observation as the combustion of olefiant gas, I think we may safely assume 8558 to be nearer the mark than any of the figures obtained by the direct combustion of isolated carbon.

"I have already mentioned that the combustion heat of carbon, as resulting from the combustion of cyanogen gas, represents even a higher figure than 8558; and Dulong's experiments on the combustion heat of the vapour of oil of turpentine furnish additional proof that 8558 expresses most correctly the amount of heat evolved by one gramme of carbon.

"One litre of vapour of oil of turpentine yielded, in Dulong's experiments, 70607 degrees of heat. Now, as one litre of vapour of oil of turpentine contains eight litres of hydrogen gas and five litres of carbon-vapour, (the specific weight of camphene or oil of turpentine vapour is 4·764, according to Dumas,) it is obvious, that upon subtracting from 70607 the known amount of heat evolved by the combustion of eight litres of hydrogen—i. e., 24848, the remainder will indicate the amount of heat evolved by the combustion of five litres of carbon-vapour (or five times 1·0808 grammes of carbon)—

70607 yielded by the combustion of one litre of vapour of oil of turpentine.
24848, the evolution of which is owing to the combustion of the eight litres of hydrogen contained in one litre of vapour of oil of turpentine.

there remains 45759

as the amount evolved by the combustion of five litres of carbon-vapour; the figure 9151·8 will accordingly express the amount of heat evolved by the combustion of one litre of carbon-vapour (1·0808 grammes of carbon); 8467 or 8468 will therefore express the amount of heat evolved by the combustion of one gramme of carbon, and this figure (8467—8468) corresponds, as closely as can reasonably be expected in experiments of this kind, to that obtained by Dulong as the result of the combustion of olefiant gas, alcohol-vapour, and ether-vapour—viz., 8557—8558.

"It must be remarked, finally, that in Dulong's experiments, the alcohol, ether, and oil of turpentine were submitted to combustion in their fluid state, and that consequently the resulting figures are not liable to any subtraction for the latent heat of the vapours. These figures—i. e., 34792 for the combustion heat of hydrogen, and 8558 for the combustion heat of carbon, are unquestionably far more correct and precise than those upon which Dulong and Despretz originally based their calculations of the amount of heat produced in the respiratory process of animals at the expense of the inspired oxygen—i. e., produced by the conversion of this oxygen, within the organism into carbonic acid and water. Let us, therefore, now calculate this amount upon the basis of these corrected figures, and see what will be the result.

DESPRETZ.	Amount of heat produced by the conversion of the oxygen inspired during the same space of time, into carbonic acid and water.		
Amount of heat evolved by the animal in a given definite space of time.	According to Despretz' calculation, C = 7815 H = 23640	According to our corrected calculation, C = 8558 H = 34792	According to Despretz' calculation, substituting 7912 for 7815 (C) and 34792 for 23640 (H)
1 Rabbit . . 100	90·4	107·48	102·04
2 Ditto . . . 100	85·8	101·74	96·76
3 Six young ditto 100	82·1	98·71	94·09
4 Rabbit . . 100	86·7	101·78	96·38
5 Guinea-pig . 100	88·8	104·45	98·97
6 Ditto . . . 100	88·9	104·53	99·00
7 Dog . . . 100	80·8	98·16	93·80
8 Ditto . . . 100	74·1	90·31	86·30
9 A young dog 100	74·5	91·30	87·40
10 Cat . . . 100	80·6	96·81	92·25
11 Pigeon . . 100	78·8	93·10	88·26
12 Dog . . . 100	79·2	94·52	89·80
13 Cock . . . 100	79·7	94·43	89·50
14 Virginia cock 100	77·0	95·41	91·50
15 Owl . . . 100	74·6	88·50	84·00
16 Magpie . . 100	75·4	89·20	84·00

DULONG.*	Amount of heat produced by the conversion of the oxygen inspired during the same space of time, into carbonic acid and water.	
Amount of heat evolved by the animal in a given definite space of time.	According to Dulong's calculation, C = 7270 H = 21375	According to our corrected calculation, C = 8558 H = 34792
1 Cat 100	72·9	94·9
2 Ditto 100	68·8	90·1
3 Ditto 100	71·5	91·7
4 Ditto 100	75·8	98.6
5 Ditto . . . 100	73·6	95·7
6 Ditto . . . 100	72·8	94·6
7 Ditto 100	80·2	104·7
8 Ditto 100	79·2	103·0
9 Wind-hover . . 100	71·5	97·2
10 Ditto 100	78·9	104·1
11 Guinea-pig . . 100	69·4	83·6
12 Ditto, young . 100	74·9	90·2
13 Ditto, ditto . . 100	80·0	95·5
14 Rabbit . . , 100	75·5	91·1
15 Ditto, young . 100	83·3	101·8
16 Ditto, young . 100	74·5	95·4
17 Pigeon . . . 100	78·7	95·9

* Annales de Chimie et de Physique, 3 série, t. i. p. 455.

" These figures need no comment; they prove, with unquestionable certainty, that an animal, placed in an appropriate apparatus, evolves, in a given definite space of time, exactly as much heat as the same apparatus would have received had the oxygen inspired during the same space of time been combined directly in the apparatus with a certain definite proportion of carbon sufficient to form an amount of carbonic acid, exactly corresponding to that exhaled in the same space of time, and with a certain definite proportion of hydrogen sufficient to form an amount of water exactly corresponding to that which we assume to be formed in the organism by that portion of the inspired oxygen which does not form carbonic acid. And thus the question whence the heat of the animal body proceeds is fully answered.

" With regard to the amount of nitrogen exhaled, according to Dulong and Despretz, by the animals which served these chemists in their experiments, a simple calculation will show that the data of these chemists cannot be correct, and that the increase which they found in the volume of the air in which the animals breathed must be ascribed to some error in measuring the carbonic acid gas formed, and the oxygen gas absorbed.

" In Dulong's experiments, a dog weighing 1150 grammes exhaled, according to this chemist, in eighty minutes, 0·375 litres of nitrogen gas: this makes, in twenty-four hours, 6·75 litres, or 7·46 grammes of nitrogen. Let us suppose, for a moment, that this nitrogen proceeds from the body of the animal. We know that one hundred grammes of fresh meat contain four grammes of nitrogen, (they contain seventy-five per cent. of water.) Now let us further assume the whole animal to be composed simply of flesh, and thus to contain four per cent. of nitrogen, (and this is positively too much, since the blood and the bones contain less nitrogen than the flesh, and the fat is even entirely free from this element,) seven days' breathing would finish the whole dog, leaving nothing behind except the bones, earth, and the salts contained in its organism, just as if the animal had been burnt with oxide of copper; all the other parts—hair, skin, flesh, and blood, must of necessity have become converted into gas. In Despretz' experiments, two dogs (weight unknown) are stated to have exhaled 1·097 litre of nitrogen gas in 102 minutes, and 15·4 grammes of this gas in twenty-four hours. If such were indeed the fact, each of these two animals would lose half a pound of flesh in the course of every thirty-one hours. In both their calculations I have disregarded, of course, altogether, that the animals yield urea in their urine, and nitrogen in their fæces. My intention here simply is, to show that it is utterly impossible that animals should exhale such a vast amount of nitrogen as Dulong's and Despretz' statements would lead us to believe; and it is for this purpose only that I give these calculations,—the conclusions to which they obviously lead, are, of course, absurd."

Liebig's views in the above essay have been opposed by several chemists, who express doubts regarding the accuracy of the figures representing the " coefficient of combustion." Thus Grassi * asserts that we have no right to deduce the " coefficient of combustion" of a simple body from that of a compound body into which it enters, as has been done in the preceding paper, for that is to assume that a compound body develops in its combustion the same amount of heat as if the elements had been burned separately,—an assumption opposed to known facts.

Grassi further observes that respiration is not the only chemical action

* Journal de Pharmacie, Oct. 1845.

that gives origin to an appreciable amount of heat. Many chemical and physical actions unknown to us occur during the processes of digestion and assimilation, some of which develop heat while others absorb it. Without ascribing to animals a special calorific power, he thinks that respiration is not to be regarded as the only source of animal heat. Grassi's views regarding animal heat approximate to those of Simon. (See Simon's Animal Chemistry, Vol. I, p. 142.)

A theory of animal heat has been recently published by Dr. Spencer,* of Geneva College, United States. The following are his principal conclusions, as drawn up by himself:

1. The lungs perform an excretal office, on which life constantly depends, directly or indirectly aiding calorification.

2. The substance thrown off is hydrate of carbon.

3. The carbon, on coming in contact with atmospheric oxygen, combines with it, forming carbonic acid gas, which is thrown off by the lungs and skin by expiration and perspiration.

4. The amount of latent heat of the oxygen gas employed, is much greater than that of the carbonic acid gas formed in the lungs, and hence caloric is set free, imparting heat to the blood and surface.

5. This free heat also combines with the water of the hydrate of carbon, and converts it into vapour.

6. The lungs and cutaneous surface aid in *regulating animal temperature*, by the conversion of water into vapour, thus conveying off any excess of free caloric in the system, by combining with it in the form of latent heat.

7. The water of the hydrate of carbon is converted into vapour in the lungs and upon the surface, precisely as when wood is burned, and hence assumes the form of insensible respiratory and perspiratory transpiration.

8. Facts appear to show that the chemical changes in both venous and arterial blood may occur, independent of the vital principles, by applying to the venous, oxygen gas, and to the arterial, carbonic acid gas.

9. The systemic red capillaries are the antagonists of the pulmonary, and are constantly decomposing carbonic acid, and with water forming hydrate of carbon; or, in other words, carbonizing the blood.

10. From this union, water and carbonic acid are transformed into a solid substance, and hence latent, becomes free heat, at every point where red blood circulates.

11. The functions of the systemic red capillaries of the body in *decomposing*, and that of the small vessels of the lungs and skin in *recomposing* carbonic acid gas, reciprocally depend upon and *balance* each other; in other words, one set *carbonizes*, the other *decarbonizes* the blood.

12. In consequence of the indissoluble link which connects the functions of respiration and calorification, the degree of temperature, the carbonic acid evolved, and the size of the lungs as compared with the bodies of animals, always bear a direct ratio to each other.

13. There is a beautiful analogy between animals and vegetables, in the decomposition of carbonic acid by the minute vessels of each.

14. This explanation shows that the great end and function of respiration is, both *directly* and *indirectly*, to aid in the all-important office of the generation and diffusion of animal heat.

* Vital Chemistry. Lectures on Animal Heat; by Thomas Spencer, M.D., Professor of the Institutes and Practice of Medicine in the Medical Institute of Geneva. We have been unable to obtain the work in time for the present Report. This notice of his views is taken from a review of his work in the July number of the American Journal of the Medical Sciences.

The theory of respiration adopted by Dr. Spencer differs, as he remarks, essentially from that of Lavoisier, Laplace, and Prout, which supposes carbon and hydrogen, or hydro-carbon, to exist in the blood, and that both become oxidized by respiration. "Hydro-carbon is a mere imaginary compound, which was necessary to complete their theory, while hydrate of carbon, as the author has shown, is an extensive triple compound." According to Dr. Spencer, the lungs are not only employed in the functions of *excretion* and *calorification*, in expelling and oxidizing the carbon of the hydrate of carbon, but are the last of the organs of *hematosis*, viz.:

1. In decarbonizing the chylous and other constituents of blood, thus fitting them for nutrition.

2. This decarbonization of the elements originally entering the animal as food, furnishes the carbon of carbonic acid, and the hydrate of carbon employed in the function of calorification.

3. That the oxides of iron are the first instruments for oxidizing and deoxidizing carbon as the important agent in calorification, while atmospheric oxygen is the last agent.

4. The protoxide of iron is the carrier of the carbonic acid from the lungs to the systemic capillaries.

5. The affinities of the iron in its circle for calorification, show that if either oxide exists as a constituent of blood, the other oxide must necessarily be formed; the *pulmonic* and *systemic* capillaries antagonizing and balancing each other in oxidizing and deoxidizing these compounds.

6. The iron of the blood is originally derived from vegetables in the form of oxide of iron.

7. This oxide of iron is converted into perchloride of iron by the muriatic acid of the gastric juice, and thus rendered soluble.

8. The perchloride of iron is reconverted, in the lungs, into the hydrated peroxide of iron by the free soda of the blood.

9. The hydrated peroxide is converted into the protoxide of the lungs, by oxidizing the carbon of the nutritious fluids.

10. The protoxide carries carbonic acid, thus formed, to the systemic capillaries for calorification, and is there reconverted into hydrated peroxide.

11. In the series of chemical compositions and decompositions of iron and carbon as explained, an exact balance is preserved in the amount of each, at all points of the organism, where employed for calorification.

12. The oxides of iron are probably employed in *oxidizing* and *deoxidizing* various other compounds than those already considered.

13. In deoxidizing sugar, &c. to form animal fat, and in oxidizing the carbon of the fat for calorification.

[The foregoing propositions present a general view of the doctrines of our author in relation to respiration and calorification; they press themselves upon the attention of the physiologist by their simplicity and apparent strict accordance with numerous well-established facts in relation to the chemical constitution of the components of the animal organism, and demand a cautious and candid examination on the part of all who have the time and talents required to test their accuracy. If, as the author very candidly remarks, every step of his inquiry shall be found to be fortified by ascertained facts, and his deductions to have been legitimately drawn, he has succeeded in pointing out and determining "a circle of vital affinities, uniting all the structures and functions of the organism, and making each set of capillaries mutually dependent on, and balanced by others, in the chemico-vital changes produced in their passing currents of blood. That such a series exists," he adds, "and that the links in the chain may be demonstrated, cannot be doubted; but in consequence of the intricacy of the

subject, and of my limited knowledge of experimental chemistry, a due distrust is still felt in the accuracy of the attempted determination."

§ II.—*The Blood.*

2. *On the effects of food on the blood.*—Dr. Buchanan has drawn the following conclusions on the state of the blood after taking food, from a series of experiments lately communicated to the Glasgow Philosophical Society:

1. The serum of the blood of a healthy man fasting, is perfectly transparent, and of a yellowish or slightly greenish tint. 2. A heterogeneous meal, such as that usually set on the tables of the rich, renders the serum white. 3. The whiteness may commence as early as half an hour after eating, and may continue ten or twelve, and sometimes as long as eighteen hours, according to the kind and quality of the food, and the state of the functions of primary and secondary digestion. 4. *Starch* and *sugar*, probably all vegetable substances destitute of oil, give no whiteness to the serum of the blood. 5. *Fibrin*, *Albumen*, and *Casein*, and probably protein-compounds in all their forms, if destitute of oil, give no whiteness. 6. Oils combined, whether naturally or artificially, with protein-compounds or with starch, render the serum of the blood white; probably, therefore, oils produce that effect, in whatever way taken. 7. Gelatin seems to render the serum of the blood white; this, however, cannot be considered as certainly established, as there may have been some fat in the beef-tea which was taken along with the calf-foot jelly, in both experiments on which the above conclusion rests. 8. The coagulum of the blood very frequently exhibits, after taking food, a crust of pellucid fibrin, or of pellucid fibrin dotted with more opake particles, and with little of the contraction technically named "cupping," 9. The appearances of the coagulum just mentioned are much more common after azotised than after non-azotised food. These conclusions relating to the visible characters of the blood may be considered, with the single exception above mentioned, as well established. The conclusions which follow relate chiefly to the chemical properties of the blood, and are not worthy of the same reliance:

1. The substance described above, which Dr. Buchanan names Pabulin, is most abundant in the blood a few hours after taking food, sooner or later, according to the rapidity of digestion. 2. It is less abundant as the time when the food has been taken is more remote, and is small in quantity after a fast of twenty-four hours. 3. It is much more abundant after azotised, than after non-azotised food. 4. It varies in quality, floating or subsiding, according to the kind of food taken. 5. It is probably analogous in nature to the white substance which gives colour to the serum of the blood. 6. The difference between these two forms of this substance probably is, that it is sometimes combined with an alkaline or earthy salt (chloride of sodium, sulphate of soda, &c.), and sometimes with an oily body (stearate of glycerine, &c.) In the former case it seems to dissolve completely in the blood, while in the latter it is only partially dissolved, and renders the serum opake. 7. The azotised principles of the food are probably made to combine in the digestive tube with the alkaline, earthy, and oily salts mentioned above, and thus become capable of being absorbed into the blood. 8. The alkaline and earthy compounds are probably absorbed directly by the blood-vessels, while it seems to be well ascertained that the oily compounds are absorbed through the lacteals.*

* Med. Gaz. Oct. 10, 1845.

3. *On the method of analysing blood.*—(For this process, see Art. 46.)

4. *Blood in inflammation.*—Polli* has continued his researches on this subject. The fibrin while circulating in the system exists in a state of fluidity, and remains so for some time, even when removed from the organism. The blood, however, always coagulates before the occurrence of putrefaction. "I have often," he observes, "and for a long time, sought for the dissolved, incoagulable blood of certain pathologists, but I have never met with a single instance in which, when left to itself for a sufficient period, and duly protected from external destructive influences, it did not at length coagulate before it became putrid. I have even more than once caused blood to coagulate which had been taken in a fluid state from the veins thirty-six or forty-eight hours after death." He adds that the rigor mortis is perfectly independent of the coagulation of the blood.

Inflammation, according to Polli, gives rise to three leading modifications in the fibrin,—1, Its quantity is increased; 2, Its resistance to coagulation is likewise increased; and 3, There is an augmentation of its "molecular rarefaction." He proposes to name the second of these modifications *bradifibrin*, and the third, *parafibrin*. The two first modifications being sufficiently known, we shall confine our observations to the *parafibrin*. The fibrin in this particular state of fluidity produces such a rarefaction of the principles of the blood, and especially of its serum, that it (the blood) is rendered specifically denser when it is defibrinated.

The following case (selected from many similar ones) affords a good illustration of this modification.

A woman eight months pregnant was attacked with pleuro-pneumonia. Venesection being performed, the blood, at the moment of its extraction, had a specific gravity 1025·62; after defibrination its specific gravity was 1026·46. Altogether she was bled eight times; on the sixth occasion the specific gravity, as the blood escaped from the vein, was 1022·68, and remained so after defibrination. On the last occasion the specific gravity was 1018·9, and after defibrination 1019·32.

From these and similar facts it might be concluded, that in certain morbid conditions the fibrin becomes rarified, or less dense; that the fibrin thus rarified communicates its tenuity to the mass of the blood; and, in fine, that the fibrin becomes of less specific gravity than the albumen. Such a conclusion would, however, be too general, for in inflammatory affections the fibrin does not always assume this character. *Parafibrin* is only one of the modifications that can be impressed on the blood by inflammation. The first effect is a mere simple augmentation of the fibrin; as the inflammation becomes more intense *bradifibrin* is produced; while *parafibrin* is only formed when the inflammatory affection has reached its acme, or at least (and this is an important reservation) when it has attained the highest point permitting of complete resolution.

The following are some of the characters by which parafibrin is characterized. It in general coagulates very slowly, and then only in such delicate and transparent filaments as to be hardly visible to the naked eye: in fact, with the serosity is retained in it, it resembles a gelatinous rather than a fibrinous clot. The delicate texture formed by the coagulation of this species of fibrin closely resembles the cellular network that supports the albumen of the egg, or the hyaloid membrane of the eye. Abundance of parafibrin is found in the bullæ arising from burns, or from the applica-

* Annali Universali, 1845. A sketch of his earlier researches may be seen in the Gaz. Méd. 1844, p. 304.

tion of blisters. To obtain it, it is only necessary to allow a little of the serum to rest in a glass for a short time. On decanting it we observe a gelatinous coagulum, which in the course of twelve or twenty-four hours becomes converted into a soft fibrous membrane, which falls to the bottom of the glass.

When, in addition to the *parafibrin*, the blood contains a certain amount of ordinary fibrin or of *bradifibrin*, the coagulation of these two forms of fibrin not only takes place at different periods, but each presents a distinct and peculiar appearance. Thus we first perceive filaments of fibrin, which are white, opaque, and resemble a network of large meshes, for the most part radiating towards the centre. Amongst these filaments we can afterwards observe the transparent and gelatinous coagulated parafibrin.

The whole paper is well worthy of perusal. The author does not seem to be acquainted with the researches of Mulder, otherwise he might have noticed a close analogy between parafibrin and tritoxide of protein.

5. Zimmermann has communicated several observations respecting the blood in inflammatory affections of the respiratory organs. The following are the results of his analyses, conducted according to the method of Andral and Gavarret:

	Water.	Fibrin.	Blood-corpuscles.	Res. of serum.
1.	790·0	3·0	127·0	80·0
2.	784·0	4·0	126·0	86·0
	796·0	6·0	119·0	79·0
3.	810·0	7·0	106·0	77·0
	805·0	5·0	103·5	85·5
4.	806·0	9·6	109·9	74·5
5.	774·0	4·0	142·0	80·0
	781·0	4·0	137·0	78·0
	786·0	4·0	131·5	78·5
6.	796·0	3·0	128·0	73·0
7.	794·0	3·0	123·5	79·5
8.	792·0	3·0	120·0	89·0
9.	800·0	4·0	119·5	76·5
10.	800·0	4·0	108·0	88·0
11.	798·0	7·0	116·0	79·0
	815·0	8·0	100·5	76·5
12.	806·0	3·5	100·5	90·0

If we compare the mean of these analyses with the average deduced by Andral and Gavarret from 58 analyses of the blood in similar cases, we have:

Zimmermann	796·2	4·75	118·10	80·85
Andral .	799·0	7·30	114·10	81·00

The leading difference in these averages occurs in the fibrin. Zimmermann suggests that probably Andral and Gavarret used only buffed blood.

6. *Blood in Bright's disease.*—In a case of albuminuria in which the dropsy was only of a fortnight's standing, the blood was analysed by Dr. Ayres.*

There was a firm buffy coat on the blood, a quarter of an inch in thickness. The coagulum itself was very firm, and so bulky as almost to fill the glass.

* Lancet, Aug. 2, 1845.

There were contained in 1000 parts:

Water	765·022
Solid constituents	234·978
Fibrin and tritoxide of protein	11·450
Fat	a trace
Albumen	65·875
Hæmatoglobulin	138·185
Albuminate of soda and salts	13·940
Osmazome	1·510

No urea could be detected in this blood, the leading characters of which were a great increase of fibrin and a diminution of the water and fat.

Dr. Ayres gives, in the same Essay, an analysis of the blood in a case of anasarca without albuminuria. The serum was milky, and had a specific gravity of 1016. The clot was moderately firm, rather small, and slightly buffed.

The urea amounted to about ·5 in 1000 parts of blood, and was found to be diminished in the urine.

Heller* has recently published a series of analyses of the blood, urine, and dropsical effusions in Bright's disease.

1st Case.—A man of tolerably robust appearance, aged 38 years. The disease was somewhat advanced, and there was considerable œdema. The blood was analysed on two occasions. On the first occasion it was taken by cupping from the region of the kidney. It was very fluid but of the normal colour. The clot was small and presented no peculiarity. The serum was slightly coloured. Under the microscope the blood-corpuscles appeared large and swollen. The blood was tested for urea and found to contain a considerable quantity.

Five ounces were subsequently removed by venesection. The colour of the blood on this occasion was rather dark, and the coagulation was perfect. The clot was of a bright red colour on the surface, but otherwise dark, and there was no buffy coat. The serum was very pale and opalescent, and its specific gravity was only 1022. It contained no bile-pigment, and its reaction was strongly alkaline.

In 1000 parts were contained:

Water	805·39	
Solid constituents	194·61	
Fibrin	3·52	
Albumen	51·45	Solid residue of serum 68·15
Fixed salts	6·70	
Extractive matter	8·15	
Urea	1·85	
Hæmatoglobulin	122·94	

2d Case. (Heller's seventh case.)—A woman, aged about 30 years, with the disease in an early stage. There was slight œdema of the feet

* Archiv für Physiologische und Pathologische Chemie und Mikroskopie, vol. ii, p. 173.

and face, accompanied with pain in the region of the kidneys. Four ounces of blood taken from the arm presented no physical peculiarities. The specific gravity of the serum was only 1018, or 10 deg. lighter than normal serum. The clot was to the serum in the ratio of 544·75 : 455·25.

In 1000 parts of blood there were contained:—

Water	816·04	
Solid constituents	183·96	
Fibrin	2·66	
Albumen with a little extractive matter	48·03	Solid residue of serum 56·73
Fixed salts	6·96	
Urea	1·74	
Hæmatoglobulin	124·57	

Heller's general conclusions respecting the blood in Bright's disease are that the specific gravity and the amount of solid constituents are diminished, and that the diminution is dependent alone on the decrease of the albumen, which for the most part is found in the urine, but to a less degree also in the dropsical effusions. The appearance of the blood is normal, and in its coagulation it presents no peculiarity. The serum is pale, of low specific gravity (as may be shown by the common urinometer) and contains no bile-pigment.

The fibrin and blood-corpuscles occur in the ordinary quantity. The solid residue of the serum is much diminished in consequence of the great decrease of the albumen. Urea is abundant in the blood; in the first analysis it amounted to 1·85 in 1000 parts: reckoning the whole amount of blood in the body at thirty pounds this would contain about an ounce of urea. The presence of urea in the blood must not, however, be regarded as peculiar to Bright's disease, since it has been found in a large quantity in cholera, ischuria, and other diseases associated with suppression of urine.

The fixed salts present no remarkable declension from the normal standard, but are usually slightly below the healthy average.

The analysis of the urine in these cases will be found in a future page.

7. *Blood in diseases of the eye.*—Zimmermann has made several analyses of the blood in cases of blepharo-blennorrhœa and ophthalmia catarrhalis [rheumat.] gastrica.

1. In a case of ophthalmia of two days' standing, accompanied with much chemosis, the specific gravity of the blood was 1051, and 1000 parts yielded 200 of solid residue. The specific gravity of the serum was 1027, and of the clot 1086.

In 1000 parts there were:

Water	798
Solid constituents	202
Fibrin	2·0
Blood-corpuscles	117·5
Solid residue of serum	82·5

The serum was of a bluish red colour and opaque.

2. The blood drawn from a patient on the third day of the ophthalmia had a specific gravity of 1052, and 1000 parts yielded 205 of solid residue. The specific gravity of the serum was 1028, and of the clot 1090.

In 1000 parts there were:

Water	795
Solid residue	205
Fibrin	2·0
Blood-corpuscles	115·1
Solid residue of serum	87·9

3. A patient on the second day of the disease yielded blood of specific gravity 1055, and 1000 parts yielded 210 of solid residue.
The specific gravity of the serum was 1030, and of the clot 1092.

In 1000 parts of blood there were contained:—

Water	790
Solid residue	210
Fibrin	2
Blood-corpuscles	115
Solid residue of serum	93

4. In a similar case the blood had a specific gravity of 1054, and 1000 parts yielded 206 of solid residue. The specific gravity of the serum was 1035, and of the clot 1088.

In 1000 parts there were contained:

Water	794
Solid constituents	206
Fibrin	3
Blood-corpuscles	108
Solid residue of serum	98

5. A soldier with conjunctivitis and sclerotitis of the right eye. The specific gravity was 1052, and 1000 parts yielded 205 of solid residue. The specific gravity of the serum was 1030, and of the clot 1084.

In 1000 parts there were contained:

Water	795
Solid constituents	205
Fibrin	2·5
Blood-corpuscles	104·0
Solid residue of serum	98·5

6. In a case of conjunctivitis of both eyes, without fever, the specific gravity of the blood was 1055, and 1000 parts yielded 214 of solid residue. The specific gravity of the serum was 1036, and of the clot 1088.

In 1000 parts there were contained:

Water	786
Solid constituents	214
Fibrin	2·0
Blood-corpuscles	113·5
Solid residue of serum	98·5

7. In a case of ophthalmia of the left eye, the specific gravity of the blood was 1055, and 1000 parts yielded 210 of solid residue. The specific gravity of the serum was 1031, and of the clot 1090.

In 1000 parts of blood there were contained:

Water	790
Solid constituents	210
Fibrin	2·0
Blood-corpuscles	114·7
Solid residue of serum	93·3

Three days having elapsed, venesection was again ordered. The specific gravity of the blood was then 1050·8, and 1000 parts yielded 198 of solid residue. The specific gravity of the serum was 1027·7, and of the clot 1078.

In 1000 parts there were contained:

Water	802
Solid constituents	198
Fibrin	2·0
Blood-corpuscles	116·2
Solid residue of serum	89·8

8. The blood of a soldier on the third day of the disease had a specific gravity of 1052, and 1000 parts yielded 204 of solid residue. The specific gravity of the serum was 1031, and of the clot 1080.

In 1000 parts there were contained:

Water	796
Solid constituents	204
Fibrin	2·5
Blood-corpuscles	106·7
Solid residue of serum	93·8

Four days afterwards the specific gravity was 1050·5, and 1000 parts yielded 200 of solid residue. The specific gravity of the serum was 1028, and of the clot 1078.

In 1000 parts there were contained:

Water	800
Solid constituents	200
Fibrin	2
Blood-corpuscles	108
Solid residue of serum	90

After an interval of 10 days he was again bled. The specific gravity was 1050, and 1000 parts yielded 196 of solid constituents. The specific gravity of the serum was 1027, and of the clot 1078.

In 1000 parts there were contained:

Water	804
Solid constituents	196
Fibrin	3·5
Blood-corpuscles	97·0
Solid residue of serum	95·0

A glance at the leading characters of the blood in these eight cases, will show, that in these patients the blood was in a state of hypinosis. (See Simon's Animal Chemistry, vol. i, p. 287.)

8. *Intermittent fever.*—The blood of those who have lived for some time in malarious districts, and who have suffered from the ordinary endemic diseases, as intermittent fever, scurvy, or organic disease of the spleen or liver, has been examined by Salvagnoli. It is usually very black, and coagulates imperfectly, no firm tenacious clot being produced. A true buffy coat is never observed.

In four cases in which the blood was analysed by professor Cozzi, the fibrin occurred in its normal quantity, but the fat and albumen were diminished. In three of these cases there was a great excess of cholesterin, and scarcely any phosphates; in the remaining case (No. 3) these salts were abundant, while no cholesterin was found.

The following are the results of Cozzi's analysis:

	1.	2.	3.	4.
Water and salts .	737·67	705·49	732·45	809·17
Fibrin . .	2·20	2·06	2·29	1·96
Fat . .	·15	·21	·13	·16
Albumen . .	48·71	56·61	47·59	53·10
Blood-corpuscles .	211·27	235·63	217·54	135·61

The blood in (1) was taken from a soldier with severe intermittent fever, accompanied with considerable enlargement of the spleen and liver.

The blood in (2) was taken from a man with quartan fever, whose spleen and liver were much enlarged, and the latter the seat of excruciating pain.

The blood in (3) was taken from an artillery-man, who for five years had been stationed in a malarious district. It was a case of intermittent fever, with slight enlargement of the liver, but extraordinary hypertrophy of the spleen.

The blood in (4) was taken from a man with angina tonsillaris, who had suffered from the fever for a long time: spleen enlarged and very painful.

In addition to the excess of cholesterin in the majority of these cases, bile-pigment was observed in the blood. The connexion between the occurrence of these constituents and the deranged state of the portal system is sufficiently obvious.

9. *Scrofula.*—The blood in this disease has been carefully examined by Mr. Nicholson, who has communicated to the 'Northern Journal of Medicine' the result of numerous analyses.

The analyses were conducted on Andral and Gavarret's method.

	Water.	Fibrin.	Blood-corpuscles.	Residue of serum.
1.	816·5	3·0	101·0	79·5
2.	820·2	2·8	98·0	79·0
3.	820·5	2·4	98·0	79·1
4.	821·0	3·0	97·0	79·0
5.	823·0	2·5	96·5	78·0
6.	839·0	2·3	80·0	78·7
7.	840·0	2·0	79·0	79·0
8.	839·0	2·0	79·0	80·0
9.	855·3	1·2	63·5	80·0
10.	855·2	1·8	64·0	79·0
11.	854·3	1·7	65·5	78·5
12.	855·0	2·0	64·0	79·0

The blood-corpuscles were few, light coloured, and irregular, and there was sometimes an appearance as if their circumference was notched and divided.

A glance at the above table will show that the blood in this form of disease falls under the category *spanæmia*, the physical and chemical characters of which are thus described by Simon.

Physical characters. The blood is very fluid; it is sometimes of a dark or even violet, and sometimes of a bright colour; it usually coagulates imperfectly, sometimes not at all. The clot is small, soft, diffluent, and neither covered with a true nor false buffy coat. The serum is generally of a bright yellow colour, but sometimes of a dark yellow, or even red tint. The specific gravity of the blood is considerably diminished.

Chemical characters. The amount of fibrin and of corpuscles is diminished; the amount of residue of serum is either normal or diminished; the proportion of water is higher than in healthy blood; the amount of salts in the serum is sometimes normal, sometimes diminished.

[We have now laid before our readers the principal analyses of blood that have appeared since the publication of our last Report. Chemistry in its various applications to medicine is so rapid in its progress that we must content ourselves with a limited selection from the varied stores set before us in the English, French, and (more especially) German periodicals. If it should be deemed, by any of our readers, that analyses are being uselessly multiplied, we would remind them "that a single isolated analysis is of very little intrinsic value in substances of so varying a nature as the blood or urine. The only method by which we can hope to throw any light upon the leading alterations that occur in these fluids is by the comparison of the results obtained from a series of analyses; and if we were desirous of merely ascertaining so simple a fact as the determination of the pathological states in which either an excess or a deficiency of fibrin and blood-corpuscles occurs in the blood, and the relation that exists between such pathological states and such modifications of the vital fluid, science would be more benefited by the investigation than by the performance of a few very perfect analyses which did not tend to elucidate any particular point."*]

10. *Menstrual fluid.*—Since the publication of our last Report, an analysis of this secretion has been made by Dr. Letheby. The menses were retained by an imperforate hymen, which when cut into, permitted the escape of about forty ounces of a thick and almost black fluid, having the appearance of treacle. When examined under the microscope, with a power of 300, it was found to be quite free from fibrin, but numerous corpuscles were observed floating in it. The greater number of them were altered blood-corpuscles, but there were also noticed the exudation or inflammatory globules (of Gerber and Gluge), lymph-corpuscles, mucus-corpuscles, epithelium-scales, and minute granules resembling mere dots.

The fluid had an alkaline reaction, and was perfectly miscible with water; when heated a little below 212° it formed a firm coagulum.

It was analysed in accordance with Simon's directions and was found to contain:

Water . . .	857·4
Solid constituents . .	142·6
Fat . . .	5·3
Albumen . . .	69·4
Globulin . . .	49·1
Hæmatin . . .	2·9
Salts . . .	8·0
Extractive matters . .	6·7

* Simon's Animal Chemistry, vol. i. p. 89.

Another analysis was performed with the view of estimating the quantity of mucus, blood-corpuscles, and soluble albumen, and gave the following results:

Water	857·4
Solid matters insoluble in cold water, and consisting of mucous, lymph, and exudation globules with epithelium	22·6
Solid matters soluble in cold water, and consisting of saponified fats and blood-corpuscles . . .	53·8
Albumen	52·7
Salts	7·0

These must be taken as the constituents of the fluid. It can, however, hardly be regarded as the normal menstrual secretion; from the length of time in which it remained in the vagina it became mixed with an excess of mucus, and acting as an irritant, produced the inflammatory globules that were observed in it.*

§ III.—*Digestion, and the Fluids of the Chylopoietic Viscera.*

11. *Healthy saliva.*—Mialhe† has recently announced the discovery of an active principle in the saliva analogous in its physical and chemical characters to diastase. It is solid, white or greyish-white, amorphous, insoluble in alcohol, but soluble in water and spirit. The directions for obtaining it are the following: Filter saliva and treat it with five or six times its weight of absolute alcohol, adding it as long as any precipitate occurs. This animal diastase is insoluble, and falls in white flocks, which must be collected on a filter and dried. It forms about ·2% of the whole saliva. A series of experiments were subsequently instituted by Lassaigne, with the view of ascertaining whether pure saliva, obtained from the parotid duct, acted like diastase on starch, at the temperature of the human body. The results of these experiments are as follows:

a. Human saliva, and that of the horse, at the temperature of 103°, exert no solvent power on starch, which remains quite unaltered in its physical and chemical properties.

b. At a higher temperature (158° to 167°) maintained for three hours and a half, horse's saliva acts on starch exactly as water does; that is to say, the granules become tumid and distended, without being changed into either dextrine or glucose.

c. Human saliva obtained from the mouth has no action on starch at the temperature of the body; but converts it rapidly into dextrine, at a temperature between 158° and 167°, and subsequently converts the dextrine into glucose.

d. During the digestion of raw amylaceous substances, the saliva being at the temperature of the animal body, cannot exert the influence attributed to it by Mialhe; it can merely, as most of the older and modern physiologists maintain, contribute to moisten the alimentary bolus, and dissolve such of its principles as are soluble in water.

12. *Morbid saliva.*—Scherer has analysed the saliva of a girl aged 15 years, suffering from a scorbutic affection of the mouth. There was copious ptyalism, the saliva amounting to about 40 ounces in twenty-four hours. The secretion was very liquid, fetid, and alkaline. The sp. gr. was 1004.

* Lancet, Aug. 2, 1845. † Lancette Française, April 1845.

In 1000 parts there were contained:

Water	988·8
Solid constituents	11·2
A caseous-like substance, precipitable by acetic acid	6·5
Fat taken up by ether	0·6
Extractive matter and ptyalin	1·8
Carbonate of soda	1·2
Chloride of sodium	0·7
Phosphate of lime	0·4

On examining with the microscope the fluid immediately after its discharge, there were found in it a large number of infusoria, and a peculiar confervoid-like vegetation.

13. *Bile.*—In our last Report we noticed the circumstance of a large proportion of sulphur occurring in taurin. The details of the analysis by which Redtenbacher was led to the discovery have not yet been published, but the accuracy of the observation has been further established by Professor Gregory,* of Edinburgh. "I find," he observes, "that when taurin is deflagrated with nitre, and the heated mass dissolved in water and neutralized with an acid, nitrate of baryta causes a very copious precipitate of sulphate. We may therefore assume the fact as proved."

Frerichs† has recently analysed bile both in health and disease; but he does not seem to be aware of the discovery to which we have just alluded, and in all probability his analyses were made previously. The following are the physical characters of healthy human bile, according to Frerichs:

In colour it is always deep brown, but when seen in thin layers it has a brownish yellow tint. It is very fluid, being viscid only in new-born infants. The sp. gr. varies from 1032 to 1040. On examining with the microscope bile from the gall-bladder, with which, of course, a certain amount of mucus is mixed, there are observed:—1. Transparent or grayish round vesicles, about $\frac{1}{700}$th of a line in diameter. They disappear on the addition of alcohol or ether, and are removed by filtration. 2. Conical yellow bodies, about $\frac{1}{140}$th of a line in length, and about $\frac{1}{300}$th or $\frac{1}{400}$th of a line in breadth, apparently devoid of nuclei; these are epithelium cells from the gall-bladder. 3. Here and there irregular dark granules, which disappear on the addition of a solution of potash; apparently pigment-cells. 4. Occasionally minute crystals of cholesterin, occurring as colourless rhombic tablets. The chemical characters are shown in the two following analyses. The bile in these cases was obtained from healthy men, killed by severe accidents:

	1.	2.
Water	86·00	85·92
Solid constituents	14·00	14·08
Bilate of soda	10·22	9·14
Cholesterin	0·16	0·26
Margarin and olein	0·32	0·92
Mucus	2·66	2·98
Chloride of sodium	0·25	0·20
Tribasic phosphate of soda	0·20	0·25
Basic phosphate of lime, „ magnesia	0·18	0·28
Sulphate of lime	0·02	0·04
Peroxide of iron	traces	traces.

* Outlines of Chemistry, p. 566.

† Hannov. Annal. 1 and 2, 1845.

14. *Morbid bile.*—After briefly noticing the effects of age, nutriment, climate, constitution, &c., on the biliary secretion, Frerichs proceeds to the consideration of the influence of disease on the bile. We have only space for the two following analyses.

	Bile in pneumonia.	Bile in Chronic meningitis.
Water . .	94·60	95.98
Solid constituents .	5·40	4·02
Bilate of soda .	4·16	2·63
Fat .	0·42	0·20
Mucus and salts .	1·00	1·21

15. *Gastric juice.*—In our last Report we noticed the researches of Bernard and Barreswill in connexion with this secretion. It was there shown that they believed that the active principles of gastric juice were free lactic acid and an organic matter, which is precipitated and destroyed by a temperature of about 190°. In a subsequent communication* they assert that the digestive powers of this organic matter vary according to the nature of the medium in which it is dissolved, according as it is acid or alkaline. Thus in the gastric juice, which is acid, it dissolves nitrogenous matters, as fibrin, gluten, albumen, &c., while it has no action upon baked starch; but if the gastric juice is rendered alkaline by the addition of a little carbonate of soda, it rapidly dissolves the starch while it has lost the power of dissolving nitrogenous substances. These physiological properties being exactly those of the saliva and pancreatic fluid, it became an interesting point to ascertain if a change in the reaction of those fluids would cause an alteration in their properties, as was observed with the gastric juice. The authors state that on acidulating the saliva and pancreatic fluid, which are naturally alkaline, their ordinary mode of action is inverted, and they are rendered capable of dissolving meat and other nitrogenized matters, whilst they have lost the power of dissolving starch. Hence they conclude that an organic principle, which is the agent of digestion, exists in the gastric juice, saliva, and pancreatic fluid; and that it is the nature of the chemical reaction alone which causes the physiological action to vary.

The importance of the subject must be pleaded as an excuse for the following somewhat lengthy extract from a paper by Dr. R. D. Thompson. The conclusions without the experiments on which they are based would be comparatively valueless.

"As it appeared to be a matter of importance in the investigation of the changes occurring in the stomach during digestion, in order to prevent complication of the phenomena, that the food should be as simple as possible, I have chosen, for the experiments about to be detailed, cases in which animals were fed on vegetable food alone. In general, the species of food selected was porridge, or a mixture of oatmeal and water, well boiled. In such experiments as I have seen detailed in reference to the free acid of the stomach, there appears to have been too little attention paid to the possible results which might arise from a difference in the nature of the food. Thus the products of the digestion of starch we should naturally expect to be different from those of the digestion of animal fibrin or albumen, since we know that lactic acid can be produced by a modification of starch, although the same change does not attend the decomposition of the animal substances enumerated. For example, in the preparation of starch an acid liquor collects on the surface of the vessels in which the starch is digested, and in the formation of *sowans* from oat-husks and water by

* Comptes Rendus, July 7, 1845.

steeping, an acid liquor is developed,—in both instances a consequence of the production of lactic acid at the expense of starch; while in the German dish, saurkraut, the same acid is generated by an analogous action. I do not at present intend to discuss the nature of the acid which presents itself in the stomach during the digestion of animal food, but simply to detail the results of a series of experiments upon the changes produced on vegetable food and starch during digestion. I shall merely content myself with stating, that I have never found a volatile acid in the stomachs of animals which were digesting animal food alone, while in these cases I have invariably found an acid to be present which was fixed at the temperature of 212 deg., and even considerably higher.

" It does not appear an invariable rule that acid reaction should always characterize the liquid present in the stomach during digestion, as appears from the following experiments. On the 11th July 1844, the different stomachs of a sheep killed twenty-four hours after partaking grass, contained between two and three pounds of finely-divided green matter, exhibiting a pulpy consistence, but being entirely destitute of either an acid or alkaline reaction. The pulpy masses were tested in each of the stomachs, with the same negative result, and they were afterwards mixed together, diluted with distilled water and filtered, but still without any effect on litmus paper. Experience teaches us, that to determine the presence of a volatile acid in the stomach, great care must be taken in reference to the mode in which the distillation is performed, since if the heat of an open fire is applied to the retort, an indication of the presence of hydrochloric acid will be found in the liquid contained in the receiver by the addition of nitrate of silver. The following experiment affords evidence in favour of this position, and it might be strengthened if necessary, by the results obtained by other experimenters. The contents of the stomach of a dog which had been fed on porridge made of oatmeal and water, and which afforded an acid reaction with litmus paper, were mixed with distilled water and filtered. On exposing the distilled liquor to the heat of an open fire, in a retort, a fluid passed over possessing an acid reaction, and becoming opalescent on the addition of a solution of the nitrate of silver, and without disappearance in contact with nitric acid; a result plainly indicative of the presence of chlorine in some form in the liquor of the receiver, but as appeared by the subsequent inquiries, to be explained by the fact that muriate of ammonia must have been carried over by the vapour of water, in consequence of the excess of heat. To determine in a satisfactory manner, therefore, the presence of a volatile acid, it is necessary to distil the fluid contents of the stomach in a water-bath. With this consideration in view the following experiment was made. A pig was fed on potatoes and greens, and was killed in half an hour after the food was swallowed. The stomach was slit open, and as much of the fluid contents as possible were poured off; the solid contents were then digested in cold distilled water. Both fluids were filtered and mixed, each previous to being united being found to exhibit an acid reaction with litmus infusion. To ascertain whether the statement made by a French physiologist (Blondlot) is correct, viz. that the acid of the stomach cannot be saturated with chalk, a quantity of pure carbonate of lime was prepared by dissolving Irish limestone in hydrochloric acid, precipitating a small portion of phosphate of lime and iron which it contains, with caustic ammonia, and then throwing down the lime with the carbonate of ammonia, collecting the precipitate on a filter, washing it well with distilled water, and heating it to redness in a platinum crucible. An excess of this chalk was then added to the filtered fluid of

the stomach, and the mixture was allowed to remain for twenty-four hours, disturbed only by frequent agitation. It was then filtered, and found to have been completely neutralized. Having often repeated this experiment on various specimens of gastric fluid with the same effect, I can only account for the different result obtained by Blondlot, by supposing that he had attempted to complete his neutralization of the fluid while it was in a heated state, and that possibly, if acetic or lactic acids were present, these acids might resist neutralization at an elevated temperature, since it has been found by manufacturers of pyroligneous acid that they cannot succeed in forming a neutral acetate of lime at a temperature approaching that of the boiling point by chalk alone, but that they require to add milk of lime in order to overcome the acid reaction. Blondlot has deduced the inference from his experiments, that the stomach owes its acid reaction to the presence of an acid phosphate of lime; but as the experiments now detailed do not coincide with those of the French physiologist, it is sufficiently obvious that they do not support him in his conclusions.

"Being thus foiled in corroborating the deduction of Blondlot, that phosphoric is the free acid of the stomach, it was requisite to look out for another source of the acidity of the gastric fluid. It was therefore necessary to test the muriatic or hydrochloric acid theory, as propounded by the sagacity of Dr. Prout.*

"The contents of the stomach of a pig, which had been fed on porridge two hours before being killed, were mixed with cold distilled water and filtered. Six fluid ounces of this fluid, which was quite clear and limpid, were introduced into a retort and distilled in a warm bath. The distillation occupied several hours; three ounces of fluid were distilled over, which possessed the peculiar smell of such fluids, and reddened infusion of litmus slightly. The three ounces of fluid remaining in the retort had a strongly acid reaction, and gave no appearance of acetic acid on the addition of chloride of iron. From twelve ounces of another portion of the same gastric fluid, four ounces of fluid were distilled over by the heat of the water-bath, which presented the same characters as those of the distilled fluid just described; but in neither instance could a trace of hydrochloric acid be detected by nitrate of silver.

"With the liquor remaining in the retort, three experiments were made to determine the possible amount of free hydrochloric acid, on the supposition that the preceding experiment did not serve as evidence to prove the impossibility of its presence. Three equal portions of the fluid were measured out, to the extent of two fluid ounces in each portion.

"1. To the first portion, a solution of nitrate of silver was added until a precipitate ceased to fall; pure nitric acid was then mixed with the liquid, and the temperature raised to the boiling point. The precipitate was filtered, washed, and weighed.

"2. The second portion was evaporated to dryness and ignited; the residue was dissolved in water and precipitated by nitrate of silver, the solution being acidulated with nitric acid and brought to the boiling point.

"3. The third portion was exactly neutralized with caustic potash, evaporated and ignited; the residue dissolved in water, and the solution precipitated by nitrate of silver.

"The results of these experiments are indicated in the following table in grains:

* See Phil. Mag. S. 2, vol. iv, p. 3 and 120.

Exp.	Weight of chloride of silver.	Weight of chlorine.	Weight of hydrochloric acid.
1.	78·1	1·95	2·00
2.	1·17	1·79	1·84
3.	7·97	1·99	2·04

"The atomic weights here employed are Dr. Thomson's:—

Oxygen . . .	= 1·
Hydrogen . . .	= ·125
Chlorine . . .	= $4\frac{1}{2}$
Silver . . .	= $13\frac{1}{2}$

"The correspondence between the first and third experiment shows that in the first no organic substance had been in union with the silver, which was precipitated by chlorine alone, and that there is no evidence from these results of free muriatic acid being present. The conclusion is the reverse, since if any free muriatic aeid had been neutralized by the potash the third experiment ought to have given an inferior quantity of chloride of silver, because the sal ammoniac ought to have been sublimed. The potash which was added, I conceive, in the third experiment, united with an organic acid; the salt formed was decomposed by the incineration, and the potash united to the chlorine previously in union with ammonia; for that sal ammoniac or a volatile muriate was present is proved by the second result.

"It is well known that Dr. Prout by similar experiments drew the conclusion that free hydrochloric acid was present in the stomach. That distinguished chemist, however, omitted the first experiment which I have described. Indeed, he could not have made it successfully under the circumstances in which he operated, because the gastric juice in his experiments was not exposed to a heat that could coagulate and separate the albuminous matters, which would then have combined with the oxide of silver and have complicated the result. In the gastric juices employed in the preceding researches, however, nothing was present but soluble starch or dextrin and sugar, which formed obviously no compounds with silver, insoluble in boiling nitric acid. It is possible, therefore, in the experiments of Dr. Prout, who determined the total amount of chlorine in the gastric fluid by supersaturating with potash, igniting and precipitating with nitrate of silver, that he had formed cyanide of potassium, which would precipitate cyanide of silver along with the chloride, unless the precaution were taken not merely to *add* nitric acid, but to *boil* the solution after the addition of the acid, since cyanide of silver is insoluble in, or, at least, not wholly decomposed by cold nitric acid. I offer this explanation, originally proposed by Leuret and Lassaigne, because from my knowledge of Dr. Prout, I am quite certain his experiments were most accurately made. Indeed, the testimony of all succeeding experimenters who have obtained the same results is sufficient to establish his accuracy, without the addition of any confirmation on my part. It is even possible that, in cases where the food is different, the acid may be of the nature described by Dr. Prout.

"The experiments which have been detailed seem to demonstrate that no free hydrochloric acid existed in the stomach of the animal, under the circumstances described, since no acid could be distilled over at a temperature greatly above that at which this acid boils when sufficiently concentrated, while the fluid in the retort became more intensely acid in proportion as the distillation proceeded. A portion of the liquid from the retort was evaporated to dryness, and heated to a temperature exceeding 300 deg. without giving out acid fumes; the residue was digested in water, and still

retained an acid reaction. The solution of the residue was easily saturated by carbonate of lime, and was not precipitated by chloride of calcium, indicating the absence of biphosphate of lime (contrary to the views of Blondlot), and likewise of free sulphuric acid.

"In another experiment the gastric juice was evaporated to dryness in the water-bath, and treated with alcohol and oxide of zinc with the necessary precautions; prismatic crystals were obtained corresponding with lactate of zinc, but in too minute quantity to admit of analysis, the only demonstrative argument. The preceding experiments appear to show, however, that the free acid of the stomach, in the digestion of vegetable matter at least, of all the known acids, alone corresponds with the lactic. To determine the nature of the volatile acid, which, however, appears to be present always in minute quantity, a portion of gastric fluid was distilled, and the product was obtained in three distinct receivers. Their characters, as determined by infusion of litmus, were as follows:

		Infusion of litmus.
1st product of distillation amounted to	1 oz.	bright red colour.
2d " " "	1½ oz.	paler than preceding.
3d " " "	1 oz.	slight red colour."

"From these observations, it would therefore appear that the greatest amount of volatile acid was carried over at first, and that as the distillation proceeded its amount in the retort gradually diminished, indicating that the acidity was not due to the decomposition of lactic acid or its eduction by the vapour, but rather to the presence of acetic acid. The quantity present was however trifling, since the distilled product of a large amount of gastric fluid could never be detected in a state of effervescence on the addition of carbonate of soda."

We regret that from press of matter we must defer the consideration of the formation of fat (which may be now regarded as settled,) and an important paper by Budge on the production of sugar in the organism, to our next Report.

§ IV.—*Milk.*

16. The colostrum or milk secreted immediately after delivery, has been recently studied by Clemm* and Davy.† Clemm especially noticed that the alkaline reaction speedily disappears. He has found the colostrum become acid in the course of three hours.

According to Davy, the colostrum of the cow differs from ordinary milk in several respects, especially in its richer yellow colour, in its being less liquid, of greater specific gravity, and in coagulating when heated. From the latter property it has been supposed by some physiologists to contain serum. Dr. Davy, however, shows that this fluid does not enter into the composition of the colostrum, and that its coagulability by heat depends on a peculiar modification of its caseous principle. The milk selected was from a healthy cow that calved for the first time on the 19th of July, and was drawn about an hour and a half afterwards, the udder having begun to be distended about three weeks previously. Its appearance under the microscope differed principally from that of common milk, in presenting larger

* Handwörterbuch der Physiologie, vol. ii. art. 'Milch,' by Scherer.

† Transactions of the Medico-Chirurgical Society, 1845.

oil-globules,—a very few irregular flakes, probably epithelium-scales,—a little granular matter, like curd, and a small number of granular corpuscles,—the granular bodies of the colostrum first described by Mandl, the largest of which were about $\frac{8}{4000}$ of an inch in diameter. The nature of these bodies seems to be somewhat doubtful, whether they are aggregation globules, formed chiefly of albuminous matter, or large oil-globules, with particles of curd, or even of oil attached to their surface: from their apparent specific gravity, and some other circumstances, Dr. Davy is disposed to adopt the first opinion; when colostrum mixed with water is put by in a cool place, after a few days, when the greater part of the cream has collected at the surface, a sediment is found at the bottom, consisting chiefly of these globules. It reddened, slightly, litmus paper. Its specific gravity, carefully ascertained before any separation of cream had taken place, was found to be 1075, and as high as 1080, after a portion of its cream had risen, and had been removed. To determine the degree of temperature at which it coagulated when heated, a portion of it, contained in a glass tube, was immersed in water, the temperature of which was gradually raised. At 160° Fah. it was unaffected; at 163° it coagulated: the coagulum was rather soft, but admitted of being inverted without flowing; it yielded readily to gentle pressure. It did not become hard when boiled, nor was its consistence materially increased by boiling. It may be deserving of mention, that the neutralization of the little free acid it contained, by the addition of sesquicarbonate of ammonia, had no marked effect on its coagulation by heat. It was coagulated by rennet, and more readily than common milk. In a comparative experiment, while the latter required a temperature of 110°, the former underwent the change at the temperature of the atmosphere, then about 65°. The coagulum of the colostrum was much softer than that of common milk, and the proportion of whey which separated from it was very much less. Mixed with ordinary milk and heated, the colostrum acted like rennet; twelve measures of the colostrum mixed with forty-six of milk, formed a soft coagulum, when the temperature of the mixture was raised nearly to the boiling point. The colostrum was coagulated by all the acids that he tried on it, and this at ordinary temperatures, as the acetic, muriatic, nitric, and sulphuric; and also by the citric, tartaric, and oxalic, when mixed with it in the state of powder. The coagulum it formed with the acetic and the mineral acids was soft, and of a grumous consistence; that which it formed with the solid vegetable acids was firm, like strong jelly, and diaphanous. When the mineral acids were added in large excess, the coagulum was dissolved, leaving the butyraceous part, which rose to the surface; ammonia, in the form of aqua ammoniæ, added largely in excess, formed a gelatinous mass of pretty firm consistence, which did not dissolve on immersion in water. The colostrum left at rest underwent change slowly. After three days it still retained throughout its yellow hue; a part only of its cream had risen to the surface. After seven days, the lower part had become nearly the colour of ordinary milk, retaining its liquidity, and having acquired increased facility of coagulating when heated, whilst its upper part was of a richer hue, and less fluid, being covered with a thick pellicle of the consistence of cream-cheese. This had the peculiar smell of cream-cheese, and was spotted with mildew, consisting of that kind of byssus which forms on cheese. After thirteen days, the inferior white portion had coagulated, having acquired the consistence and the properties of soft curd—the part above it having undergone little apparent change, that immediately over the curd retaining its yellowness or semifluidity; and the butyraceous cheese-like crust preserving the appear-

ance before noticed, with increased firmness and increase of mildew. Mixed with water (about two parts of water to one of colostrum), and agitated, and then allowed to remain at rest, cream rose to the surface, and curd formed and subsided, leaving, after about a week, a transparent, or nearly transparent fluid, between the supernatant cream and the sediment of curd. This fluid was acid, and held some curd in solution. It had a cheesy smell, was not rendered turbid by boiling, nor by acetic or the citric acid, but yielded a precipitate with the three mineral acids; and when kept, a white crust formed on its surface. The formation of this crust was accompanied by a disagreeable smell, similar to that of decaying cheese, but rather more offensive, partaking of the putrid odour, owing probably to the presence of some granular corpuseles. When the crust was separated by filtration, a fresh one formed on the fluid in a few days, and this successively for many days. The crust or pellicle, consisted chiefly of little cylindrical masses rounded at their extremities, about 1-1000th of an inch in length, by about 1-2000th in width. After the fluid had ceased to yield this pellicle, it was rendered turbid by nitric acid, as is also the whey of ordinary milk, whether coagulated by rennet, or spontaneously on its becoming sour by the absorption of oxygen. Other specimens of colostrum which Dr. Davy examined, afforded similar results. He noticed two in particular, the specific gravities of which were ascertained with care, and the degree of temperature at which they coagulated. The one was from a cow that calved in September, and was drawn almost immediately after; its specific gravity was found to be 1070. Whilst still warm, it reddened litmus. It was pretty firmly coagulated at 160°; at 150° it formed a soft coagulum; and at 140° it became thicker. At the lower temperatures, a much longer time was required for the effect to be produced than at the higher. The other specimen was from a cow that calved in December, and was drawn about a quarter of an hour after.

It was less thick than the colostrum usually is, was of sp. gr. 1057, and coagulated at about 162 deg. What are the inferences to be drawn from the preceding experiments? Do they not show that the peculiarities of the colostrum are not dependent on the presence of serum; and, in brief, that the colostrum is destitute of serum? The effect of rennet on it, which does not coagulate serum,* the effect of the vegetable acids on it, and the changes which it undergoes on keeping, when partially exposed to the action of the atmosphere, are the facts most to be insisted on. And in corroboration, I may mention the results of trials on the heating of mixtures of common milk and serum in different proportions. Serum, in certain proportions, occasions, like the white of egg, the coagulation of milk, giving rise to custard; but it requires a pretty large proportion—five parts of serum with fifty-five of milk, even when boiled, have no effect; and even when the former was increased to ten and the latter reduced to fifty, the mixture did not coagulate till its temperature was raised to about 195°. Whilst all these results are opposed to the idea that serum forms a part of new milk, they favour the conclusion that the caseous portion of the colostrum is in a state somewhat different from its ordinary condition in the milk of the cow; modified in some manner, either in consequence, it may be, of a slight difference in composition, or owing to the influence of the other ingredients of the milk with which it is mixed, especially the granular bodies, if admitted as aggregation corpuseles, which may perform

* See Researches Physiol. and Anat. ii. p. 97: the experiments related there have been repeated with the same negative result.

the part of rennet in promoting its coagulation, and the butyraceous ingredient, more abundant in it than in common milk, separating more slowly, and which must protect it more powerfully from the action of the atmospheric air, and from the changes consequent on the absorption of oxygen. And that the caseous portion of milk does admit of modification, and that not inconsiderable, is shown in a remarkable manner, on comparing it, as existing in the human milk and in cow's milk; in the latter, even in its ordinary condition it is readily coagulable, whilst in the former it resists this change, whether acted on by acids or rennet, and yet is easily obtained by means of evaporation, when freely exposed to the air, and without evaporation, from the slow and long-continued action of atmospheric air. A portion of milk from a healthy young woman, five weeks after delivery, of sp. gr. 1033, kept in a stoppered phial, to which air had access, a thin slip of paper having been placed between the stopper and its neck, and kept in a dark place, of about 55 deg. temperature, from November till May, had lost its milk-white hue, and deposited curd as well as thrown up cream. Strained, the whey was found of sp. gr. 1020, and 8·1 grains of dried curd were obtained from 312 grains of milk. The whey reddened litmus paper, and was not coagulated either by boiling or by nitric acid. The curd was very like that which constitutes the chief portion of the alvine evacuation of infants at the breast.

Physiologically considered, the most marked circumstances belonging to the colostrum, are the concentration of nutritive matter in it; the greater facility of its coagulation by rennet, compared with older milk, and its greater power of resisting change when exposed to the action of atmospheric air. These are qualities which may be eminently serviceable, viewing it as the first food of the young animal. Its easy coagulation may suit it to the stomach, in which probably the gastric juice, at first, is in small quantity, and feeble. Its power of resisting change, and remaining semi-fluid may adapt a part of it to the intestines, to promote the removal of the meconium, whilst its concentration as nutritive matter may fit it to perform for the calf the same part the substance of the egg serves, which enters the intestines during the latter stage of fœtal development in the instances of birds, reptiles, and fishes. The change which takes place in the cow's milk, after calving, is not unfavorable to this view of the uses of the colostrum. Recurring to the first example, of the milk of the cow which calved in July,—that drawn after 24 hours, was of sp. gr. 1039, was less thick and less coloured, and coagulated when heated to about 180 deg. The milk of the following morning was of sp. gr. 1038, did not coagulate, even when boiled, subjecting it to heat five hours after it was drawn; but after having been kept about thirty hours, then it coagulated like the preceding, at about 180 deg. Milk of the following morning, drawn on the 21st of July, about sixty hours after calving, was of sp. gr. 1033, differed hardly perceptibly from common milk in appearance, and did not coagulate on boiling, even after having been kept about fifty-four hours at a temperature little below 70 deg. and by day amounting to that.

If the special use of the colostrum of the cow is such as Dr. Davy infers, it may be expected that the first milk of other animals will be found to be similar in its properties, at least of all those young of which, like the calf, are born fully formed and vigorous, with good use of their limbs almost immediately after birth. The new milk of the ewe, of the mare, and of the sow, Dr. Davy states, is as rich and thick, and in the instance of the first two coagulates when heated. But whether the milk of the sow has the same property, he was unable to ascertain. He states, on the authority of Mr. Gulliver

in reference to the milk of the giraffe, that a small quantity "drawn within an hour after the young one was born, (May 20, 1841) was excessively rich in fat-like cream, not rendered clearer by any quantity of ether, and became thicker or clotted in a watch-glass over a candle." Whether the first milk of those animals, the young of which are born helpless and feeble, as of the carnivora, is also like the preceding, cannot be at present determined, for want of facts. Dr. Davy is disposed, however, to conjecture that it is similiar. This conclusion is founded on analogy, having found that the first milk of the bitch is so, coagulating when heated, and yielding a large proportion of animal matter (35·2 per cent.) when evaporated to dryness. There was not sufficient to determine its specific gravity. In the instance of the carnivora, it may be requisite for the first milk to be rich, from the manner in which these animals feed, having to leave their young to procure food, and to be absent, it may be, an uncertain time. And in accordance with this is the fact, that the human milk, the first drawn, is not unusually rich, and does not coagulate when heated; at least these are the results of the few trials of it made by Dr. Davy. The milk of a healthy young woman, who had been confined five weeks, nursing her first child, he found of the sp. gr. 1033; it yielded on evaporation 10·22 per cent. of solid matter. The first milk of a healthy woman, ætat. 40, after giving birth to her sixteenth child, was of sp. gr. 1033, and yielded on evaporation 12 per cent. solid matter. The first milk of another woman was of sp. gr. 1022. Examined four days after, this woman's milk was found to be of sp. gr. 1035, and to yield on evaporation 11·6 per cent. solid matter.

17. Clemm has recently published the following analyses of human milk:

	The 4th day after delivery.	The 9th ditto.	The 12th ditto.
Water	879·848	885·818	905·809
Solid constituents	120·152	114·182	94·191
Butter	42·968	35·316	33·454
Casein	35·333	36·912	29·111
Sugar of milk and extractive matters	41·135	42·979	31·537
Salts	2·095	1·691	1·939

18. *On the effect of temperament on the milk.*—It has been long believed that the milk of fair women is inferior in its properties to the milk of brunettes. As far as I am aware, the only analyses bearing on this point are those of L'Heretier. He selected two females of equal age, and made them submit to the same diet and mode of life. The following are the results of his analyses:

	A Blonde, aged 22.		A Brunette, aged 22.	
	1.	2.	1.	2.
Water	892·0	881·5	853·3	853·0
Solid constituents	108·0	118·5	146·7	147·0
Butter	35·5	40·5	54·8	56·3
Casein	10·0	9·5	16·2	17·0
Sugar of milk	58·5	64·0	71·2	70·0
Salts	4·0	4·5	4·5	4·5

He appears to have selected the analyses that presented the most marked contrast; for he observes, that if he had taken the mean of all his analyses,

the difference between the amount of the solid constituents in the two cases would have been less marked, the average ratio being 120 : 134.

19. L'Heretier has likewise investigated the changes produced in the milk by a prolonged sojourn in the breast. The two following analyses illustrate the effect thus produced. The milk in each analysis was afforded by the same woman: in the first case it had remained in the breasts for forty hours; in the second it was obtained after the infant had been sucking for some little time.

	1.	2.
Water	901·1	858·0
Solid residue	98·9	142·0
Butter	34·0	36·5
Casein	1·9	13·0
Sugar of milk	58·5	78·0
Salts	4·5	4·5

20. *Milk of the lower animals.*—In the milk of a goat, Clemm found:

Water	865·175
Solid constituents	134·825
Butter	42.507
Casein	60·321
Sugar and salts	44·065

In the milk of a bitch, fed entirely on flesh, he found that the solid constituents consisted chiefly of casein and butter, but still gave undoubted indications of the presence of a little sugar. Dumas, on the other hand, asserts that the milk of carnivorous animals fed strictly on flesh yields no sugar.

§ V.—*Urine.*

21. *On the detection and estimation of urea.*—Ragsky has directed attention to a point worthy of notice in relation to the detection of urea by the microscope. He finds that the most clearly defined crystals are obtained from a solution of nitrate of urea in moderately concentrated pure nitric acid. For this purpose, the urea is in the first place to be separated from the substance under examination in the usual manner by means of alcohol and subsequent concentration in the water-bath; a small portion of it is then dissolved in about three or four drops of tepid nitric acid upon a watch-glass, and subsequently allowed to cool; the crystals of nitrate of urea formed in this process are extremely well defined, and may be readily distinguished with a microscope of a linear magnifying power of 200. The experimenter should take care to use the nitric acid in sufficient quantity to leave a mother liquid upon the separation of the crystals, since without this the latter will not appear very distinctly. The crystals of nitrate of urea form very thin rhombic plates or laminæ, in which the acute angle is replaced by a small plane. Some of these plates swim isolated in the mother liquid, whilst another portion is found united into layers, assuming an imbricated arrangement. A characteristic property of these crystals is that they disappear with effervescence on the addition of fuming nitric acid.

With regard to the quantitative determination of urea, Ragsky observes that there is this great objection to its separation either as a nitrate or oxalate, that both those salts are perceptibly soluble, which prevents on

the one hand their complete precipitation, and on the other hand their perfect washing, on which latter account they retain a certain amount of extractive matter. No other compound of urea being known, adapted for its quantitative determination, Ragsky endeavoured to apply the products of its decomposition for this purpose. After several experiments made to this effect, with chlorine and with nitrous acid, he found that concentrated sulphuric acid answers the purpose best. For this purpose, a mixture of one part of urea, with from three to four parts of concentrated sulphuric acid is introduced into a flask, and exposed to the heat of a sand-bath which must not exceed 572° to avoid loss of ammonia. The decomposition of urea commences at 383° and the evolution of carbonic acid gas is very lively at 392°. In this process one equivalent of urea assumes the elements of two equivalents of water, and transposing with the latter is converted into two equivalents of carbonic acid which escape as gas, and two equivalents of ammonia which remain in combination with the sulphuric acid.

$$C_2 N_2 H_4 O_2 + 2\,HO + 2\,(SO_3, HO) = 2\,(NH_4 O, SO_3) + 2\,CO_2.$$

He determined, in this manner, accurately-weighed portions of pure urea dried at 212 deg., and determined the ammonia subsequently in the form of ammonio-chloride of platinum. The following numbers will show how approximately urea may be determined in this way.

1. 0·2612 grammes of urea yielded 1·9323 grammes of ammonio-chloride of platinum corresponding to 0·2598 grammes of urea.*
2. 0·3139 grammes of urea yielded 2·3175 grammes of ammonio-chloride of platinum, corresponding to 0·3116 grammes of urea.
3. 0·2716 grammes of urea yielded 2·0400 grammes of ammonio-chloride of platinum, corresponding to 0·2743 grammes of urea.

To ascertain how far the presence of extraneous matters might interfere with the accuracy of the results, sugar was mixed with the urea, but the results were unaffected. The next point was to ascertain whether the extractive matter would yield ammonia under these conditions. For this purpose Ragsky precipitated 120 grammes (nearly 4 ounces) of fresh and healthy urina sanguinis, with acetate of lead, after having previously separated the uric acid by means of some hydrochloric acid. The precipitate was mixed with water, decomposed by sulphuretted hydrogen, and the yellow fluid thus produced evaporated to a syrup, and charred with sulphuric acid. The charred mass was subsequently extracted with water, the solution evaporated, and finally treated with alcohol and bichloride of platinum. This process gave no indication of the presence of ammonia. Having thus ascertained that the extractive matters, which are normally present in urine exercise no adverse influence on the quantitative determination of urea by means of sulphuric acid and bichloride of platinum, he next proceeded to determine by this method the amount of urea present in divers samples of urine, in order to compare the results with those obtained by the ordinary methods. He found, after several experiments, that 7 grammes (a little more than 5 drachms) of urine required about 3·5 grammes (or half the weight) of concentrated sulphuric acid. If less of the acid be taken the charred mass will readily dry up, and some loss of ammonia will be incurred in consequence. The mixture of urine and

* The English reader will see the accuracy of the result more clearly by reducing the gramme to grains. From 4·022 grains used in the experiment 4·001 were recovered.

sulphuric acid is kept in a moderate state of ebullition, there is a great evaporation of water, and the fluid turns black. The temperature rises higher and higher, until at about 392°, there ensues evolution of carbonic acid gas in small bubbles. The cessation of this disengagement of gas indicates that the urea present in the analysed urine is completely decomposed. The black residue is then thoroughly extracted with water and the solution filtered. The clear and urine-yellow filtrate is finally evaporated in the water-bath, and the sulphate of ammonia treated with alcohol and bichloride of platinum.

Since urine contains salts of potash and ammonia, which will of course likewise precipitate upon the addition of bichloride of platinum, it is necessary to determine the exact proportion in which these salts are present in the urine under examination. For this purpose a separate weighed portion of urine is precipitated with bichloride of platinum, and the amount of precipitate subtracted from the former.

Two samples of urine of seven grammes each, treated according to this method, yielded 0·202 grammes of urea or 2·88%, and 0·199 grammes of urea or 2·84%. Fourteen grammes of the same urine was treated according to the ordinary plan, they yielded 0·617 grammes of nitrate of urea, or 2·15% of urea. The extractive matters of the urine yielded no ammonia.

These experiments prove that the method of determining urea in the form of ammonio-bichloride of platinum yields much more accurate results than the plan usually adopted; it may, therefore, in many cases be advantageously employed with this precaution, that all substances likely to interfere with the accuracy of the process (as uric and hippuric acids, albumen, &c.) be previously removed. It might be advisable in certain cases to separate the urea in the first place by means of oxalic acid, and then to decompose the oxalate with sulphuric acid.

The following table may save trouble in calculation.

1 atom of ammonio-chloride of platinum corresponds to					0·134498 of urea
2	„	„	„	„	0·268996 „
3	„	„	„	„	0·403494 „
4	„	„	„	„	0·537992 „
5	„	„	„	„	0·672490 „
6	„	„	„	„	0·806988 „
7	„	„	„	„	0·941484 „
8	„	„	„	„	1·075984 „
9	„	„	„	„	1·210482 „

The author concludes his paper by an acknowledgment of the kind assistance of Liebig.

A series of similar experiments instituted by Heintz, have just appeared in the November number of Poggendorff's Annalen. We shall notice them in our next Report.

22. *Albumen in urine.*—The following method for determining the amount of albumen has been recently proposed by Heller,* and offers several advantages.

A small quantity of the urine (from 20 to 10 grains) must be carefully weighed, and its solid residue accurately determined. In this way we estimate the per centage of solid residue. Another portion must be rapidly heated to incipient ebullition in a small narrow-mouthed flask. The mouth

* Archiv für phys. and path. Chemie und Mikroskopie, vol. i, p. 192.

must be then closed, in order to prevent the escape of vapour, and the liquid when cold strained through a moderately fine linen cloth. The strained fluid is thus obtained perfectly clear, the albumen remaining on the linen as a snow-white magma. By treating a small quantity with nitric acid, we may be certain that the albumen is completely separated. The amount of the solid residue yielded by the strained fluid is determined, and the per centage ealculated. The difference gives the per centage of albumen. If extreme accuracy is required, the flask with its contents may be weighed both before and after ebullition, and a correction made for the escaped vapour. In case the fluid should be alkaline, it must be previously acidulated with acetic acid.

23. *Oxalate of lime.*—Many specimens of oxalic urine give a precipitate with salts of lime, insoluble in acetic acid, and consisting of oxalate of lime. This is often dependent on the presence of oxalate of ammonia, and delicate acicular crystals of this salt may be occasionally noticed during spontaneous evaporation, on the border of the capsule.

Lehmann states that he has very frequently met with oxalate of lime in healthy urine, and that it often occurs in large quantity in cases of tuberculosis, arthritis, and especially of osteomalacia or softening of the bones. He has likewise met with it in endocarditis and other acute diseases. He states that the crystals are neither octohedra nor cubes, but four-sided double pyramids, which in their projection under the microscope appear as very minute cubes, or as somewhat larger octohedra. He further believes that a portion of the oxalate of lime is held in solution by lactic acid, and advises that if the urine be very acid, it should be neutralized, boiled, and allowed to cool slowly, before looking for the crystals.

24. *Urine in special diseases. Pneumonia.*—Heller* has recorded a singular case in which the urine emitted an odour of hydrosulphate of ammonia, and deposited a sediment of urate of soda, during this disease.

The patient was a boy aged 14 years, with pneumonia of the right lung. The peculiar odour of the urine was first observed on the tenth day of the disease. The secretion on that day was copious, of a light yellow colour, very turbid, and deposited an abundant clay-colour sediment. This sediment when examined under the microscope was found to consist of clear and beautifully defined large globules studded with numerous spines, mixed with smaller star-like objects of the same form. There were also a few epithelium-scales and mucus-corpuscles. The urine had a strongly alkaline reaction: its specific gravity was 1018.

Heller noticed the following reactions:

a. Acetate of lead produced at once a very dark brown colour, and, finally, a blackish-brown precipitate of sulphuret of lead.

b. Perchloride of iron (which seems to be the best test for sulphuretted hydrogen in urine, since purc sulphuret of iron is thrown down, while the precipitate, caused by the former test, contains the chloride, &c.) rendered the secretion almost black.

c. Nitrate of silver showed that the chlorides were in great excess.

d. Nitrate of baryta indicated an abundance of sulphates.

e. Ammonia showed that the earthly phosphates were normal.

f. Nitric acid and heat indicated the existence of traces of albumen.

The urine contained in 1000 parts :—

* Archiv für physiolog. und patholog. Chemie, vol. i, 24.

Water and hydrosulphate of ammonia . .	951·98
Solid constituents	48·02
Urea	12·21
Free uric acid	no trace
Albumen	traces
Urate of soda (in the sediment) . .	1·80
Extractive matters with a large amount of hydrochlorate and carbonate of ammonia . .	27·40
Fixed salts	6·61

As the fixed salts contained a mere trace of chloride of sodium, and nitrate of silver added to the urine showed that the chlorides were in excess, it is clear that nearly all the chlorine must be referred to the hydrochlorate of ammonia. That the sediment consisted of urate of soda was proved chemically as well as microscopically. The uric acid was determined by the ordinary test; and the soda by incinerating a portion in a platinum spoon, dissolving the white residue in dilute sulphuric acid, evaporating, and obtaining crystals of sulphate of soda.

On the following day (the eleventh), the odour remained nearly unchanged, but acetate of lead and perchloride of iron showed that the amount of hydrochlorate of ammonia was diminished. There was a small flocculent sediment composed of muriate of ammonia, mucus, and fragments of epithelium, but entirely free from urate of soda. The urine now contained a normal amount of uric acid, and about as much albumen as on the preceding day.

On the twelfth day the peculiar odour was very faint, and on the thirteenth it altogether vanished. The urine was still alkaline, but gradually resumed its normal characters.

There was nothing in the treatment to account for the production of the sulphuretted hydrogen, and it can hardly be ascribed to the decomposition of the small quantity of albumen in the urine.

Zimmermann once detected fibrin in the urine of a patient with pneumonia on the third day. The secretion was of a fiery red colour, but deposited no sediment.

25. *Hepatitis.*—Herzog* has recorded the case of a woman aged 44 years, in whom the principal symptoms were pain in the left lobe of the liver, and vomiting. The urine was of a saffron colour, but contained none of the ingredients of the bile. Its specific gravity was 1035·7, and 1000 parts yielded 68·84 of solid residue, 55·15% of which were urea.

26. *Peritonitis.*—Scherer† analysed the urine in three cases of febris puerperalis. The urine was usually of a fiery-red colour, sometimes neutral, and often alkaline (or at least it rapidly became so); it deposited a mixed sediment of pus, mucus, and urate of ammonia.

Two analyses gave the following results:

	1.		2.
Water . . .	956·63		960·24
Solid residue . .	46·37		39·76
Urea . . .	10·00		12·42
Urate of ammonia .	2·04		0·84
Alcohol-extract .	12·54		9·34
Water-extract .	8·40		10·23
Soluble salts . .	6·69		6·34
Earthy phosphates .	0·80		0·62
Albumen and mucus .	2·60	Mucus alone	0·54

* Buchner's Repert. 1844. † Untersuchungen, &c. p. 72.

In the third case the urine resembled butter-milk, and was loaded with urate of ammonia; it contained:

Water	937·00
Solid residue	63·00
Urea	6·70
Urate of ammonia	3·20
Alcohol-extract	19·02
Water-extract	27·20
Salts	6·31

Bouchardat has published an analysis of milky urine passed by a woman with this disease. It contained no traces of sugar of milk or casein, the appearance being due to a large amount of urate of ammonia. It is moreover remarkable for the large quantity of fat and of albumen. It contained:

Water	940·9
Solid constituents	59·1
Urea	12·4
Uric acid	1·5
Albumen and mucus	29·2
Fat	2·5
Alcohol-extract with lactates, &c.	5·3
Alkaline sulphates	2·7
Phosphate of soda, and biphosphate of ammonia	4·2
Alkaline chlorides	0·8
Earthy phosphates	0·5

It must be observed that this urine was clear on emission, and only became turbid on cooling.

27. *Bright's disease.*—The following is Simon's account of the microscopic characters of the urinary deposit in this disease.

"I have recently analysed the urine of a young man 21 years of age, suffering from Bright's disease, which was remarkable for the large quantity of albumen it contained. He had been attacked with anasarca and ascites, and the urinary secretion was diminished to about twelve ounces in twenty four hours; the urine was of a dark-yellow colour, had an acid reaction, and formed a whitish mucous sediment, which, when examined under the microscope, appeared to consist, at least for the most part, of long, articulated tubes, similar to those of the confervæ, which were in part filled with a dark granular matter; there were, moreover, many globules filled with the same matter, which resembled Gluge's inflammatory globule; there were also mucus- or pus-granules, and in one instance a slight quantity of very beautifully crystallized yellow uric acid. I have since examined the sediment in various cases of this disease, and find that this appearance is by no means uncommon. To the naked eye sediments of this nature resemble a little mucus, but on carefully pouring off the urine and examining the deposit under the microscope we observe:

"1st. Mucus-corpuscles of the ordinary size, more or less granular, and decidedly nucleated. 2dly. Pavement epithelium, from the mucous membrane of the bladder. 3dly. Blood-corpuscles. 4thly. Round dark vesicles, apparently filled with granular matter, and varying in diameter from ·0006 to ·0009 of a French inch. They strongly resemble Gluge's inflammatory globule. 5thly. Tubes composed of an amorphous matter, resembling coagulated albumen. That these tubes have in most cases an actual cap-

sule, and are cylindrical, may be seen by inclining the stage, when they will rotate in the fluid in which they are floating. In some the capsule appears to be absent, and we can then see an amorphous, finely granular mass, adhering in a cylindrical form. Some of these tubes are full, others empty. The former contain a granular matter, darker at some points than others, and containing cells and vesicles, similar to mucus-corpuscles. The diameter of these tubes vary from ·0011 to ·0006 of a French inch.

"I have satisfied myself, beyond a doubt, that they are derived from the epithelium investing the tubes of Bellini. Whether they are present as a consequence of Bright's disease, or whether they occur in other renal affections, must be decided by further observations: my present experience leads me to believe that they are contemporaneous with a certain amount of albumen in the urine, but that blood-corpuscles need not necessarily be present with them."

These tubes occasionally present a twisted appearance. The diagnostic value of this form of sediment is uncertain; Schönlein regards it as an undoubted sign of Bright's disease; Scherer* has, however, observed it during the period of desquamation succeeding scarlatina; the same observation has been made of Lehmann, and I have myself observed it in various cases associated with a congested or irritated condition of the kidneys.

Schlossberger has recently published a case in which, as the disease progressed, cerebral symptoms with maniacal paroxysms and perfect unconsciousness supervened, the paroxysms usually lasting for about twelve hours. The urine excreted before one of the paroxysms, and likewise that excreted during the first hour after the same paroxysm was submitted to analysis.

The urine, in both cases, was of a pale-yellow colour, faintly acid, somewhat turbid, and deposited a sediment of epithelium mixed with the tubes already described; in the course of eight hours there was also a considerable deposit of uric acid. The specific gravity of the former urine was 1011·6, and the secretion contained in 1000 parts:

	Before the paroxysm.	After the paroxysm.
Water	942·0	931·3
Solid residue	58·0	68·7
Urea	7·6	4·5
Uric acid with mucus	2·6	5·2
Alcohol-extract with salts	19·5	20·5
Water-extract with earthy phosphates	10·1	21·9
Albumen	17·9	17·0

In the 2d specimen there was a very large quantity of mucus.

In the case of albuminuria, before noticed, in which the blood was analysed by Dr. Ayres, the urine was found by the same chemist to contain, on two separate occasions:†

	1	2
Water	962·336	930 57
Solid constituents	37·634	69·43
Urea	4·827	18·80
Uric acid	not determined	4·50 !
Albumen	10·049	21·71
Salts	4·443	8·76
Various organic matters	18·325	14·60

* Untersuchungen, &c. p. 57. † Lancet, Aug. 2, 1845.

The urine in Bright's disease has been recently studied by Heller.

a. In the case noticed in p. 339, of the man aged 38 years, the urinary secretion was much diminished. The urine was turbid, of a dark yellow colour, very acid, sp. gr. 1017, and deposited a slight, finely flocculent sediment, consisting of albuminous fungi, pavement epithelium, the peculiar cylindrical forms observed in Bright's disease, mucus-corpuscles, and a tolerably large number of blood-corpuscles.

On the addition of nitric acid, albumen with a violet tint was precipitated; hence the urine contained a large amount of uroxanthin.*

In 1000 parts there were contained:

Water . . .	948·0
Solid constituents . .	52·0
Urea . . .	6·1
Uric acid . . .	no trace
Fixed salts . . .	3·6
Extractive matters and uroxanthin	23·9
Albumen with some hæmatoglobulin	18·4

The greater part of the salts consisted of sulphate of potash; only slight quantities of chloride of sodium and phosphate of soda were present, and after the removal of the albumen not a trace of earthy phosphates could be detected.

No hippuric acid could be obtained from the urine, and as uric acid was likewise absent, the acidity (which in this case was very marked) could not be dependent on these acids. Heller concludes from various observations that the acid reaction is dependent on the presence of the uroxanthin.

A week afterwards the urine was again analysed. The secretion was still diminished, was very turbid, of a pale reddish colour, and formed a flocculent reddish sediment. The specific gravity was 1010, the reaction acid and the composition of the fluid nearly the same as when previously examined.

At the expiration of another week, and just before the patient's death, the secretion was still diminished, and the urine rapidly became putrid. The specific gravity was 1011, urea was present in very small quantity, and the sediment contained much pus; in other points the urine remained the same as before.

b. The patient was a man aged 40 years, with considerable œdema of the whole body.

The urinary secretion was much diminished. It was examined on several occasions principally in reference to the salts.

The urine was of a pale yellow colour, acid, and of specific gravity 1018. There was a slight deposit consisting of colourless uric acid crystals, much epithelium cylinders, albuminous fungi, and a few mucus-corpuscles. The urine contained a large quantity of albumen, very little urea, and only traces of uric acid. The salts amounted to 7·4 in 1000 parts, and contained an excess of sulphates with a diminution of chloride of sodium.

On the following day the organic constituents were similar; the sediment, however, contained in addition some granular cells (the inflammatory globules of Gluge).

* Uroxanthin is a peculiar yellow pigment, recently described by Heller, yielding by oxydation, uroglaucin, and urrhodin. We shall return to this subject in our next Report.

The urine was subsequently analysed some days afterwards. It presented the same appearance as before, and the deposit was similar. The reaction was acid, and the specific gravity 1017.

In 1000 parts there were contained:—

Water	958·0
Solid constituents . .	42·0
Fixed salts . . .	9·4

c. A middle-aged woman with considerable œdema.

The urine was diminished in quantity, was of a dull yellow colour, turbid, faintly acid, and of specific gravity 1017. It deposited a sediment consisting of numerous epithelium scales and cylinders, albuminous fungi, and a few uric acid crystals. The urine contained a large amount of albumen, which when precipitated by nitric acid had a faintly violet tint, indicating the presence of uroxanthin. The urea, uric aeid, and salts, were much diminished; the latter amounting to no more than 3 in 1000 parts of urine. Of the various constituents of the saline residue the chloride of sodium was the most diminished.

d. The urine of a patient of Professor Lippich's, with considerable œdema, was analysed. It was of a faint yellow colour, turbid, acid in its reaction, with a specific gravity of 1006, and deposited a slight sediment of epithelium cylinders, mucus-corpuscles, albuminous fungi, and a few crystals of uric acid.

In 1000 parts there were contained:

Water . . .	985·2	
Solid constituents . .	14·8	
Organic matter . .	13·6	
Fixed salts . . .	1·2	containing hardly a trace of chloride of sodium.

e. A patient aged 28 years, who first exhibited symptoms of Bright's disease while in the hospital, in consequence of a broken arm from a fall. The spinal cord likewise appeared somewhat injured by the accident.

June 12, 1844. The urine was much diminished in quantity, scarcely amounting to a pound in the twenty-four hours: it was of a blueish green (or very deep bottle-green) colour, turbid, and deposited after a short time a flocculent light-blue sediment. After standing for a longer period, a dark-blue sediment was gradually thrown down, while the supernatant fluid was yellow.

The surface of the urine was covered with a stiff film of uroglaucin, which presented a beautiful copper-like brilliancy when the light fell on it. With refracted light it appeared of a dark-blue colour, and arranged in stellar groups. The sediment, when examined under the microscope, was found to consist of a great quantity of albuminous fungi and minute crystals of ammoniaco-magnesian phosphate, together with groups of uroglaucin of a magnificent blue colour, more or less crystalline in its structure: a peculiar modification of pavement epithelium was likewise observed, oval or nearly circular, with large nuclei and nucleolar corpuscles, frequently arranged in groups; and lastly, cylinders with a little pus.

The reaction of the urine was strongly alkaline, and its sp. gr. 1013.

On the addition of nitric acid the urine became of a clear blue colour, and albumen with a violet tint was precipitated, which on standing became of

a darker blue, while the supernatant fluid was of a yellowish hyacinthine colour.

Alcohol slowly added, so as to form a layer on the surface, took up an azure colouring matter. On thoroughly mixing the alcohol with the urine, albumen with a beautiful blue tint was precipitated, while the fluid remained of a hyacinthine colour.

Ammonia communicated a brown colour to the urine.

On the addition of a salt of silver to the acidulated urine there was no precipitation of chloride of silver, but when added to neutralized urine a coffee-coloured tint was developed, indicative of uroxanthin.

On the addition of a salt of baryta there was a slight violet-colour precipitate of sulphate of baryta.

On evaporating the urine there was left a residue of a dark-blue colour, and bright blue spots were observed on the edges of the capsule. It was washed with water, in order to separate the urea, and then extracted with cold spirit of 0·830, which dissolved the urrhodin, and formed a carmine solution. (This substance might likewise have been taken up by ether.) On boiling the residue with alcohol, a solution of uroglaucin was obtained, which, on cooling, formed beautiful ultramarine-blue crystals.

The amount of urea was very small, and there was no uric acid or chloride of sodium; on the other hand, there was a large quantity of carbonate of ammonia, and a moderate amount of albumen. The earthy phosphates, phosphate of soda, and sulphate of potash, were present in very diminished quantities. Uroglaucin and urrhodin were present to a large amount.

The urine passed on the following morning (amounting to a little above two ounces) was submitted to analysis. It was of a bottle-green colour, turbid, and deposited a sediment which, when examined under the microscope, was found to contain the crystals of uroglaucin, and indeed all the constituents noticed the preceding day.

The urine was strongly alkaline, emitting an urinous ammoniacal odour. The sp. gr. was 1013, and the reactions, with nitric acid, alcohol, &c. the same as before. There was, however, a larger amount of albumen. Uroglaucin and urrhodin were likewise present in abundance.

The urine contained in 1000 parts:

Water	971·2
Solid constituents	28·8
Urea	3·81
Uric acid	no trace
Fixed salts	3·80
Uroglaucin, urrhodin, uroxanthin, extractive matters, and carbonate of ammonia	14·30
Albumen	9·89

Chloride of sodium was altogether absent; the other salts were diminished in nearly similar proportions.

Death occurred the same evening about six o'clock. Shortly before that event, nearly two ounces of urine were removed by the catheter. The secretion had lost its previous colour, and was of a deep citron yellow tint; it was turbid, and deposited a perfectly white sediment, composed of all the previous ingredients, with the exception of uroglaucin. It was acid, and remained so for twenty-four hours, although exposed during part of that time to the sun's rays. Its sp. gr. was 1012.

From the examination of the urine it seems clear that the blue uroglaucin and red urrhodin are products of oxidation of the peculiar yellow colour—uroxanthin. For the "native" urine was intensely yellow, and did not con-

tain, either in solution or in the sediment, a trace of either uroglaucin or urrhodin. On the addition of nitric acid there was a white precipitate of albumen, which gradually assumed a violet tint, and after standing for some time became of a deep blue colour. On the addition of this acid the urine became first of a carmine tint, it then became of a violet colour, and ultimately of a rich blue; and during these changes it deposited uroglaucin, presenting the appearance of bright powdered ultramarine, but under the microscope exhibiting a crystalline form. On the surface of the urine there was formed the same coppery film that was noticed as forming on the blue urine, and the microscope detected crystals of uroglaucin in it. Cold alcohol when added to the sediment took up urrhodin, assuming a brilliant carmine tint.

Hence it seems to follow that the acid urine, which was of a pure yellow colour, contained uroxanthin, and that this uroxanthin, under the oxydizing influence of nitric acid, yielded uroglaucin and urrhodin in the same manner that it had spontaneously done in the case of the bluish-green specimen. To confirm this opinion a portion of the yellow urine was exposed for a length of time to the action of the atmosphere. The same products were slowly developed that had been rapidly produced by the nitric acid. The same red metallic film was produced, the same blue tint gradually developed, and, subsequently, the same blue sediment, yielding uroglaucin and urrhodin, while the supernatant fluid was pale.

The urine contained albumen, an extremely small quantity of urea, and not a trace of either uric or hippuric acid. Hence the acid reaction could not depend (as Liebig supposes) on those acids, and Heller believes that "the acid reaction of this urine, and, indeed, in Bright's disease generally, (in which uroxanthin is always present in large quantity,) and most probably of normal urine, (at least in part,) is dependent on uroxanthin, which comports itself as an acid, being precipitable by metallic salts.

The body was examined two days after death. A small quantity of urine, amounting to hardly a drachm, was found in the bladder. It had much the same properties as the urine removed by the catheter before death: it had the same acid reaction, the same yellow colour. It deposited a copious sediment, consisting for the most part of pavement epithelium, and the characteristic cylinders; it likewise contained mucus-corpuscles and oil-globules. The urine contained uroxanthin, but not a trace of uroglaucin or urrhodin, which were, however, subsequently obtained, both by nitric acid and by exposure to the atmosphere.

f. A man under the care of Dr. Seibert. The disease was of considerable standing, and had assumed a chronic form. There was much œdema of the feet, extending to the body, and the secretion of urine was diminished. The urine was of a pale wine-yellow colour, turbid, and threw down a slight deposit consisting of pavement epithelium, cylinders, mucus-corpuscles, and crystals of ammoniaco-magnesian phosphate.

The urine was faintly alkaline and rapidly developed ammonia; its specific gravity was 1014. Nitric and hydrochloric acids communicated a reddish violet tint to the urine. After a time albumen with a violet tint was precipitated; hence the urine contained uroxanthin.

In 1000 parts there were contained:

Water	969·25
Solid constituents	30·75
Urea	2·50
Uric acid	0·60
Albumen	6·25
Extractive matters, uroxanthin, and carbonate of ammonia	17·70
Fixed salts	3·50

The fixed salts consisted for the most part of phosphate of soda; they contained mere traces of chloride of sodium, and a very small amount of earthy phosphates and sulphates.

g, This is a case noticed in pp. 339, 340, where an analysis of the blood is given.

The urine, on the day on which venesection was performed, was tolerably copious, but had been scanty for some days previously. It was of a faint clay-yellow colour, and threw down a flocculent precipitate consisting of pavement epithelium, very long cylinders, mucus and pus-corpuscles for the most part containing two distinct nuclei, albuminous fungi, a few fat globules and blood-corpuscles, and a very few minute crystals of uric acid. The reaction of the urine was strongly acid, and its specific gravity 1017. After the removal of the albumen the specific gravity fell to 1013; there was consequently a considerable quantity of albumen present, and with it a proportionate amount of uroxanthin.

The urea was much diminished.

The uric acid was increased, which is always the case in the early stages, and as long as the disease retains the acute form.

The phosphate of soda and sulphates were apparently unaffected; there were mere traces of the earthy phosphates, and the chloride of sodium was almost entirely absent.

The urine likewise contained hæmatin in solution, which communicated a brown tint to the fluid, and especially to the albumen on drying.

On the following day the urine and its sediment presented similar characters. The sp. gr. was 1012, and after the removal of the albumen 1010.

In 1000 parts there were contained:

Water	973·74
Solid constituents . . .	26·26
Urea	6·48
Uric acid	0·70
Albumen	6·03
Fixed salts	5·05
Extractive and colouring matter .	8·00

h. A man aged 20 years, who had been for a long time under the care of Dr. Bittner. The disease had assumed the chronic form, and there was great general œdema.

The urine was turbid, of a very pale yellow colour, and deposited a trifling sediment, composed for the most part of albuminous fungi, cylinders, and pavement epithelium with a few mucus-corpuscles.

The urine was faintly acid, but in the course of thirty-six hours became alkaline. The sp. gr. was 1009. It did not contain much albumen, and only a very little uroxanthin. In 1000 parts there were contained:

Water	978·5
Solid constituents . . .	21·5
Urea	2·5
Uric acid	traces
Albumen . . . ,	4·6
Extractive and colouring matters .	9·4
Fixed salts	5·0

On a farther examination of the salts it was found that the chloride of sodium was extremely diminished.

The urine was examined on two separate occasions, some days later in relation to the solid constituents generally, and the albumen. There were found:

	1.	2.
Water . .	978·6	978·2
Solid constituents .	21·4	21·7
Albumen . .	4·5	4·5

Hence in these respects it had remained constant.

Some weeks later, and very shortly before the patient's death, the urine was again examined. It was red, containing blood, had a putrid odour, and deposited a sediment which in addition to the ordinary constituents contained numerous blood- and mucus-corpusles, undoubted pus-globules, and a little uric acid. The reaction was acid, and the sp. gr. 1010. A considerable amount of uroxanthin was present.

In 1000 parts there were contained:

Water	976·23
Solid constituents	23·77
Urea	1·76
Uric acid	0·24
Albumen with a little hæmatoglobulin .	8·75
Extractive and colouring matters .	8·54
Fixed salts	4·48

The chloride of sodium was much diminished.

Hence we see that blood occurs in the urine not only in the early stages but likewise towards the close of the disease. In the former case it arises from congestion, in the latter it is a consequence of incipient dissolution.

i. A woman aged 40 years, with much œdema, under the care of Dr. Sterz.

The urine in this case was very remarkable for its extremely high sp. gr. dependent on an enormous amount of albumen.* The secretion was very much diminished. The urine was of a clay-yellow colour, turbid, and formed a tolerably abundant sediment, containing numerous cylinders and mucus-corpuscles, together with urate of ammonia. There were also a few granular cells (Gluge's inflammatory globules), and numerous albuminous fungi.

The reaction of the urine was acid. Nitric acid caused a dense coagulation of albumen, which rapidly assumed a violet tint; hence a tolerably large amount of uroxanthin was likewise present.

In 1000 parts there were contained:

Water	860
Solid constituents . . .	140
Albumen . . .	57

The urine retained these characters for a considerable time, always holding hæmatin in solution. It subsequently became less dense, as the disease assumed a chronic character.

k. A girl aged 10 years: œdema general and well-marked. The urine was very pale, of a dirty clay-yellow colour; a little fluid fat separated on the surface. There was a very slight deposit of epithelium and albuminous fungi. Reaction faintly acid; sp. gr. 1005. A small quantity of albumen was present, which, on being precipitated by nitric acid, rapidly

* The specific gravity was 1047, and 1000 parts of urine contained 57 of albumen.

assumed a violet tint; on the addition of hydrochloric acid the urine was rendered turbid, and likewise became of a violet colour, a relatively increased quantity of uric acid being thus separated, and the crystals being of a beautiful deep blue tint. Hence, notwithstanding the low sp. gr., the urine contained a large amount of uroxanthin. Of urea there were only traces, and the salts were diminished to an extreme degree; the phosphate of soda, the principal ingredient, being far below the average; the sulphates and chloride of sodium very trifling, and a mere trace of earthy phosphates. The subsequent dissection confirmed the accuracy of the diagnosis.

l. An aged man, under the care of Dr. Folwaczny. The urine was extremely turbid, of a dark clay colour, and formed a sediment, without itself becoming clear. The sediment was composed of albuminous fungi, numerous cylinders, pavement epithelium, and urate of ammonia. It was upon the presence of the latter that the turbidity was dependent, for on the application of a gentle warmth the fluid became clear. The reaction was strongly acid, and the sp. gr. 1029. After the removal of the albumen the sp. gr. was only 1017. Hence a large quantity of albumen was present. On the addition of nitric acid the albumen, with a deep violet tint, was precipitated; consequently there was much uroxanthin in the urine. The urea was far below the average; the uric acid and urate of ammonia were abundant. The salts collectively were much diminished, but most especially the chloride of sodium.

The subsequent dissection proved the accuracy of the diagnosis.

28. *Urine in typhus.*—Schönlein's opinion that the urine in the regular course of typhus is at first dark and very acid, subsequently neutral and even alkaline, and finally again becomes acid at the commencement of convalescence, has received further confirmation from the following observations quoted by Simon in his 'Beiträge.'

In one case the urine became faintly alkaline on the seventh day after admission; it remained either alkaline or neutral for seven or eight days; and then became faintly acid and gradually clearer, as soon as the patient exhibited symptoms of convalescence.

In a second (very severe) case the urine remained acid till the twenty-first day; it then became neutral, and afterwards alkaline, for the space of ten or eleven days, when it returned to its normal reaction.

In two other cases the urine became alkaline previously to the fourteenth day of the disease; in one of them the secretion was so thoroughly saturated with carbonate of ammonia, and evolved so disgusting an odour as to be perceptible over the whole ward. This urine deposited a considerable sediment of pus or mucus, mixed with the phosphates of lime and magnesia, and effervesced briskly on the addition of an acid. In one of these cases the urine remained alkaline for fourteen, and in the other, for twenty-one days, before it resumed its acid reaction. Both cases recovered.

It is worthy of notice, that a deposition of urate of ammonia not unfrequently precedes the occurrence of alkalinity and the appearance of the earthy phosphates, which, as Schönlein remarks, may be regarded as the precursors of a favorable change.

During the mild form of typhus recently (1843) prevalent in Berlin, he noticed these changes in several cases, and in fact, when from being alkaline the urine again became acid, and at the same time clear and abundant, there was scarcely any risk in giving a favorable prognosis.

29. *Urine in scorbutus.*—The urine in this disease has been analysed by Heller and Martin.

The two following cases are recorded by Heller:*

a. A girl aged 19 years, marked over the whole body, was admitted into the clinical ward of Professor Lippich.

The urine was of an intensely yellowish-brown colour, rather turbid, and deposited flocks of mucus. The odour, at first ordinary, rapidly became ammoniacal; and the same tendency was observed throughout the course of the disease. Reaction faintly acid. Sp. gr. 1021. The urine contained in 1000 parts:

Water	949·28
Solid eonstituents	50·72
Urea	16·21
Uric acid	1·27
Extractive matters with much hydrochlorate of ammonia	23·24
Fixed salts	9·80

The fixed salts consisted almost entirely of earthy phosphates and sulphate of potash, there being a mere trace of chloride of sodium. No albumen was present.

b. In a youth aged 16 years, the urine, during the progress of the disease, was of a brownish-yellow colour and turbid: and when an improvement manifested itself, the secretion became of a lighter tint, and clearer. A sediment of ammoniaco-magnesian phosphate and urate of ammonia was deposited during the disease, but gradually disappeared during convalescence. The urine had a faintly acid reaction, but, notwithstanding, evolved a putrid odour, and very rapidly became alkaline. The sp. gr. was at first 1017, and subsequently varied from that number to 1012. Traces of albumen could always be detected till symptoms of convalescence appeared. In its chemical characters it resembled the preceding case. The hydrochlorate of ammonia was much increased, while the chloride of sodium was diminished to a mere trace. The uric acid was much increased, amounting to 2 in 1000 parts. The urine remained abnormal for six days, and then appeared to have resumed its ordinary character.

Heller observes that the augmentation of the ammonia (in the form of hydrochlorate) and of the uric acid, together with the diminution of the chloride of sodium,—characters seemingly associated with this disease,—indicate that the blood must be in a state of dissolution.

In Martin's† case, the secretion was very scanty, about one or two ounces being passed at a time, and the daily amount being from twelve to twenty ounces. In its physical characters it resembled the urine described in the preceding cases.

On evaporating the urine, and allowing the solid residue to remain for some hours at a temperature of 212°, there was remarked on the surface of the brown, and (for the most part) saline mass, a copious, reticulated, dendritic efflorescence which, when examined with a lens, was found to consist of long, transparent, four-sided needles, with double-sided sharp extremities. They were proved to be neither hydrochlorates, sulphates, or phosphates, and were presumed to be crystals of hippuric acid. The following analyses were instituted:

* Archiv für phy. und pathol. Chemie, vol. 1, p. 12. † Neue med-chir. Zeit. 1845.

	1.	2.	3.
Specific gravity	1013·40	1021·26	1010·31
Water	984·42	973·74	985·730
Solid constituents	15·58	26·26	14·270
Urea	6·43	6·07	5·430
Green colouring matter (thrown down by hydroehloric acid in place of uric acid)	0·09	0·10	0·006
Extractive matters with ammonia-salts, &c.	2·34	2·25	0·650
Fixed salts soluble in water	6·30	17·00	7·794
„ insoluble in water	0·42	0·84	0·390

Analysis (1) was made on October 22d, before the administration of any remedies. The urine was faintly acid. The soluble salts consisted for the most part of chloride of sodium. Analysis (2) was made on the 3d of November with the mixed urine of the preceding twenty-four hours. It had a strong ammoniacal odour, but was perfectly neutral. The patient had taken sulphuric acid, iron, and other tonics, in the interval, without any obvious improvement, and traces of iron were found with the earthy phosphates. Analysis (3) was made with the morning urine passed on the 25th of November. The same treatment had been pursued with very decided benefit. The urine was clear, slightly yellow, and devoid of the unpleasant odour it previously evolved. Its reaction was faintly acid, and it contained traces of iron.

The green colouring matter is probably a compound of uric acid and biliphæin. A compound of this nature has been observed and described by Heller.*

30. *Urine in rheumatism and gout.*—The following analysis of the urine of a man aged 22 years, suffering from acute rheumatism, was made by Dr. Baumert.† The urine submitted to analysis was passed on the fourteenth day of the disease. It was of a deep yellowish brown colour but perfectly clear. In the course of twenty-four hours it deposited a copious sediment of urate of ammonia, but did not become alkaline.

It presented the normal degree of acidity, and its specific gravity was 1028·3. It contained in 1000 parts:

Water	928·68
Solid constituents	71·32
Urea	18·65
Uric acid	0·86
Extractive matter with a large quantity of hydrochlorate of ammonia	37·61
Fixed salts	14·20

The fixed salts contained no trace of chloride of sodium, the normal amount of earthy phosphates, a slight excess of alkaline phosphates, and an augmentation of the sulphates.

Hippuric acid was sought for without success.

Oxalate of lime is of frequent occurrence in cases of acute rheumatism.

In chronic rheumatism, if the pains are not very acute, and the night's rest is not disturbed, the urine retains its normal properties. Out of thirty-seven cases observed by Becquerel, the urine remained unaffected in twenty, while in seventeen it assumed the inflammatory type, and in nine of these threw down a spontaneous sediment.

* Archiv fur phys. and pathol. Chemie, vol. 1, p. 99. † Ib. p. 45.

Simon made four analyses of the urine in two cases of gout, with the view of determining the effect of benzoic acid on that secretion

	Before administration.	After ditto.	Before administration.	After ditto.
Water . .	976·73	978·84	965·25	962·43
Solid constituents .	23·27	21·16	34·75	37·57
Urea . .	7·02	6·10	9·23	10·00
Uric acid .	0·50	0·48	0·58	0·60
Earthyphosphates	0·35	—	0·28	—
Sulphate of potash	2·67	—	2·08	—
Phosphate of soda	1·60	—	4·53	—
Hippuric acid .	—	0·65	—	0·69

If we determine the per centage of the urea and uric acid in relation to the solid residue, we find in the first case, that before the use of benzoic acid the urea amounted to 30·16% and the uric acid to 2·14%, and afterwards they amounted to 28·21% and 2·22% respectively. In the second case the urea and uric acid amounted to 26·56% and 1·66% before the use of the acid, and 26·61% and 1·59% afterwards.

These analyses are insufficient to show that benzoic acid exerts any influence on the amount of urea or uric acid. The clinical experiments of Froriep and others indicate, however, that it is a valuable remedy in various forms of arthritis.

Froriep* has published a notice of twenty cases of gout and chronic rheumatism in which he administered benzoic acid. During the first twenty-four hours the symptoms are always aggravated, but they usually subside on the second day.

31. *Urine in osteomalacia.*†—Marchand analysed the urine of a child with osteomalacia three days before its death. The fluid was invariably acid, and contained in 1000 parts:

Water	938·2
Solid constituents	61·8
Urea	27·3
Uric acid	0·9
Lactic acid and lactates . . .	14·2
Phosphates of lime and magnesia . .	5·7
Other substances and loss . . .	13·7

The earthy phosphates in this instance are five or six times as abundant as in health. In one of the cases recorded by Mr. Solly,‡ there was found in the urine between three and four times the amount of phosphate of lime that occurs in the healthy secretion.

32. *Urine in dropsy.*—Heller§ analysed the urine of a woman aged 40, suffering from ascites. The secretion was tolerably copious, of a light yellow colour and turbid, from containing a large quantity of mucus. It was neutral but speedily became alkaline. Its specific gravity was 1007, and it contained in 1000 parts:

* Simon's Beiträge, p. 294. † Lehrbuch der physiolog. Chemie, p. 338.
‡ Transactions of the Medico-Chirurg. Society, p. 448, 1844.
§ Archiv für phys. and pathol. Chemie, vol. 1. p. 47.

Water	978·40
Solid constituents	21·60
Urea	8·40
Urie aeid	mere traces
Extraetive matter and traces of albumen	7·11
Fixed salts, ehiefly chloride of sodium	6·00

33. *Urine in syphilis.*—Heller examined the urine of a man aged 38, who was taking iodide of potassium for a syphilitic eruption accompanied with pains in the bones. When the urine was first examined he was taking two seruples daily in three ounces of distilled water; on the second occasion (four days afterwards) he was taking additionally half a grain of iodine.

	1.	2.
Specific gravity	1015	1021
Watcr	974·800	954·40
Solid eonstituents	25·200	45·60
Urea	7·736	13·82
Urie aeid	0·310	0·51
Extraetive matters and hydroehlorate of ammonia	6·433	12·15
Fixed salts, ineluding iodide of potassium	10·520	19·32

The urine on the first oecasion was excreted in about the normal quantity, was of a dark-yellow eolour, and had an acid reaction; on the second occasion it was of an intensely dark-yellow colour, and its reaction was faintly alkaline; its amount was also diminished. No albumen or biliphæin was present in either ease.

After the eontinuanee of the second preseription for eight days, the urine of twenty-four hours was eolleeted with the view of aseertaining the amount of iodine removed by the kidneys. The whole daily urine amounted to 850 grammes or 24·5 ounees.

In order to estimate the amount of iodine, 200 grammes of urine were evaporated, the residue dissolved in water, and ammonia added to the filtered solution till it exhibited a strongly alkaline reaetion. On the addition of nitrate of silver a preeipitate was thrown down which was washed with a weak solution of ammonia, dried, and weighed.

From the 200 grammes of urine 0·94 of iodide of silver were obtained, eontaining 0·507 of iodine; hence 1000 parts of urine eontained 2·535 of iodine, corresponding to 3·322 of iodide of potassium. Consequently, in the whole daily amount of urine there were contained 2·824 grammes or 38·689 grains of the iodide. Now the 40 grains of iodide of potassium and half grain of iodine may be regarded as equivalent to 40·626 grains of the iodide alone (for iodine is always in a state of combination when it oeeurs in the seeretions), and eonsequently the whole of the iodide was removed by the kidneys, with the exception of nearly two grains which were distributed partly to the saliva, sweat, nasal mueus, &c., and partly remained in the blood.

34. *Urostealith in urine.*—Heller* has recently announeed the diseovery of a new constituent of urinary ealeuli, to which he has given the name *urostealith*. It is soluble in earbonate of soda; and when that remedy is administered, urostealith in a state of solution is found in the urine.

* Archiv fur phys. und patholog. Chemie, vol. 2, p. 1.

The patient was a man of tolerably good constitution, aged 24 years; he complained of pain in the region of the right kidney, and difficulty in micturation, occasionally passing small elastic soft concretions. These were examined by Heller, and found to be perfectly soluble in alkalies, with which they formed a soap.

35. *Analysis of the urine before the administration of carbonate of soda.*—25th Feb. The urine had a light yellow, whey-like appearance, no odour, and deposited a sediment of ammoniaco-magnesian phosphate. Fat-globules were detected under the microscope. The reaction was neutral; the specific gravity 1017·5. It contained in 1000 parts:

Water	965·800	
Solid constituents	34·200	
Urea	12·631	
Fat	0·320	
Extractive matters with much hydrochlorate of ammonia	8·569	
Fixed salts	12·680	
consisting of		
Earthy phosphates	2·040	12·680
Chloride of sodium	0·163	
Sulphate of potash	2·296	
Basic phosphate of soda and peroxide of iron	8·181	

Moreover, every 1000 parts of urine threw down 0·62 of pure ammoniaco-magnesian phosphate. Not a trace of uric acid could be detected.

28th Feb. The day after the carbonate of soda had been given, the urine was neutral, of a pale yellow colour, and had a specific gravity of 1006. Fragments of urostealith were detected in the sediment, mixed with ammoniaco-magnesian phosphate. No uric acid was present.

By the 2d of March the calculus of urostealith was almost entirely dissolved. The reaction of the urine was neutral; the addition of ammonia produced a reddish brown tint; (this is regarded by Heller as a test for urostealith;) uric acid was still absent. The specific gravity was 1020. The urine contained in 1000 parts:

Water	959·90
Solid constituents	40·10
Urea	11·20
Fat and urostealith	3·40
Extractive matters and hydrochlorate of ammonia	8·29
Fixed salts	17·21

No sediment was deposited. In order to obtain the urostealith, a large quantity of urine was evaporated, and sulphuric acid added in order to decompose the soap. The urostealith was taken up by boiling ether, which, on evaporation, yielded a violet tint.

36. *Urine of peculiar colour.* Dr. v. Velsen* has published the case of a man aged 84 years, with chronic cystitis, who passed very fetid urine of a deep violet colour, after the use of lime-water mixed with warm milk. After the omission of the draught for a few days, the peculiar colour disappeared.

37. *Urine during pregnancy.*—The following observations on kystein, made by the late Dr. Simon, of Berlin, and published in his 'Beiträge' &c. are well worthy of attention:

* Casper's Wochenschrift, 1844, No. 18.

"Since Nauche's announcement (a few years ago), of the discovery of a peculiar substance to which he gave the name of *kystein*, in the urine of pregnant women, the renal secretion during this state has been carefully examined by numerous chemists.

"Nauche describes kystein as a white mass that, after the urine has stood for some time, separates, partly rising to the surface, where it forms a somewhat tough pilous membrane interspersed with glistening crystals, and partly sinks to the bottom, forming a creamy precipitate. Nauche regards kystein as an indubitable sign of pregnancy. It is also considered a certain test by Eguiser; he states that it appears after the urine has stood two to six days, depositing itself as a white opaque body, and then rising to the surface and producing a film like the solid fat that settles on cold broth. From an extensive series of observations, Dr. Kane concludes that kystein does not appear sooner than 30 hours, or later than 8 days after conception; that on its first appearance it forms a scarcely perceptible membrane, which gradually becomes firmer and thicker, and after a time, breaks up, the fragments sinking to the bottom; that a kystein-like membrane may also appear in the urine of persons with phthisis, arthritis, metastatic abscesses, vesical catarrh, &c. but that it differs from true kystein, both in the manner of its formation and of its destruction; it appears later than the true kystein, but, having once appeared, develops itself more rapidly and possesses less tenacity. The urine is neutral or ammoniacal on the appearance of the kystein, which, under the microscope, appears as an amorphous matter consisting of minute opaque corpuscles, intermingled with crystals of ammoniaco-magnesian phosphate. Dr. Kane convinced himself that the occurrence of kystein was independent of the presence of albumen; he likewise ascertained that it occurs not only during pregnancy, but also during the period of lactation, especially when the secretion of milk is at all checked. He concludes with the observation that "when pregnancy is possible, the exhibition of a clearly-defined kystein-pellicle is one of the least equivocal proofs of that condition, and that when, in a case of suspected pregnancy, this pellicle is not found, if the female be healthy, the probabilities are as twenty to one that the prognosis is incorrect."* It appears from a review of Kane's cases, that the kystein most commonly appears on the third day; in one case, however, it could not be observed till the eighth day after the urine had been passed; and in some cases it appeared during the first twenty-four hours.

"During the first weeks of pregnancy, Kane only rarely observed it; it was most commonly noticed during the seventh, eighth, and ninth months, and up to the period of delivery. In eighty-five cases of pregnancy it was absent eleven times, and was present in thirty-two out of ninety-four cases examined during lactation.

"I have examined the urine during the second, third, fourth, fifth, and sixth months of pregnancy, but have not invariably detected kystein. In the cases in which it was formed, as in the second, fifth, and sixth months of pregnancy, the urine on emission was clear, yellow, faintly acid, and not affected either by nitric or acetic acid, or by heat. Usually, in about twenty-four hours, the whole urine became slightly turbid, the acid reaction disappeared, a white viscid sediment was deposited, and soon afterwards the surface of the fluid became covered with a pellicle at first extremely delicate, but after from twelve to twenty-four hours becoming tough, thick, opaque, and with a glistening appearance in consequence of the light

* American Journal of Med. Science, July 1842.

reflected from numerous minute crystals of ammoniaco-magnesian phosphate with which it was studded. On examining this pellicle in its early state under the microscope, it appeared (when magnified three hundred times) to consist of an amorphous matter composed of minute, opaque points, such as are presented by sediments of phosphate of lime or urate of ammonia, except that in the latter the individual particles are usually darker, more clearly defined, and larger than in kystein. The whole field of vision was likewise bestrewed with numerous vibriones in active motion, and crystals of ammoniaco-magnesian phosphate. When the pellicle became thicker, precisely similar phenomena were observed, but the vibriones were supplanted by a considerable number of monads; on the addition of acetic acid the crystals disappeared, while the amorphous matter remained unaffected. On digesting the pellicle in acetic acid, and adding ferrocyanide of potassium to the filtered solution, a comparatively slight turbidity ensued, but on macerating the pellicle in a dilute solution of potash, acidulating the filtered solution with acetic acid, heating, and adding ferrocyanide of potassium after a second filtration, a more decided turbidity was observed. From these experiments I concluded that a protein-compound was present. The white sediment, that occurred after the urine had stood for some days, possessed a disagreeable, pungent, caseous odour: under the microscope it presented the same appearance as the pellicle. After repeatedly washing a portion of the sediment with water, and then heating it with alcohol and a little sulphuric acid, it developed a disagreeable fruit-like odour, reminding me of butyric ether. [We shall presently show that the accuracy of this observation has been thoroughly established by Lehmann.] It results from the above observations, that kystein is not a new and distinct substance, but a protein-compound, whose formation is undoubtedly and closely connected with the lacteal secretion. From the observations of Kane and myself, it seems to follow that pregnancy may exist without the occurrence of kystein in the urine; if, however, there is a probability or possibility of pregnancy, and kystein is found in the urine, then the probability is reduced almost to a certainty. We are unable to draw any positive inferences respecting the stage of pregnancy from the appearance of the kystein.

"A deposit of caseous matter and earthy phosphates was frequently observed by Golding Bird in the advanced stages of pregnancy. This sediment is probably similar to Nauche's kystein.

"Every urine left to itself forms a pellicle, more or less resembling that of kystein. If formed soon after the urine is discharged, it consists of earthy phosphates, which, from the urine being alkaline, are, for the most part precipitated, but likewise form a delicate film on the surface. When this is the case, the pellicle is very thin and readily sinks to the bottom. Under the microscope crystals of ammoniaco-magnesian phosphate, and an amorphous matter very similar to kystein, but consisting of phosphate of lime, are observed: this likewise differs from kystein in being soluble in free acids. A pellicle of fat on the surface of urine may sometimes be mistaken for kystein; films of this nature are very thin and usually iridescent, and under the microscope reveal the presence of numerous fat-globules.

"The membrane formed on the surface of urine six or eight days after emission, usually consists of a species of mould; under the microscope there may be seen innumerable filaments matted together, and interspersed with sporules.

"I once observed a pellicle on the surface of a man's urine three days

after emission, which both in chemical and microscopical characters presented the closest analogy to kystein."*

Lehmann† frequently examined the urine of a pregnant woman from the second to the seventh month. It was of a dirty yellow colour and more inclined to froth than usual; it generally became turbid in from two to six hours; but the morning urine, after standing for thirty-six or forty-eight hours, was always covered with a grayish-white film, which often, in two or three days, sank and mixed with the sediment that formed when the turbidity appeared, but sometimes was a longer period before it broke up. By means of ether he could always remove from this film a considerable quantity of viscid fat, which formed a soap with potash, and then, on the addition of sulphuric acid, developed a well-marked odour of butyric acid. On treating a large quantity of this urine with sulphuric acid, and distilling, he obtained, after treating the distillate with baryta water, brilliant crystals of butyrate of baryta. The substance taken up by ether, when greatly evaporated with nitric acid and exposed to the vapour of ammonia, was not in the least reddened; with concentrated hydrochloric acid, on the other hand, it assumed a blue tint; dissolved in potash, boiled, and treated with hydrochloric acid, it developed sulphuretted hydrogen; it dissolved tolerably freely in acetic acid, from which it was precipitated by ferrocyanide of potassium. These reactions left no doubt of its being a protein-compound. The portion of the film insoluble in potash consisted chiefly of phosphate of magnesia, (ammoniaco-magnesian phosphate?) with a little phosphate of lime. Hence Lehmann concludes that the kystein of Nauche is not a new and distinct substance, but a mixture of butyraceous fat, phosphate of magnesia, and a protein-compound very similar to casein. He likewise mentions that, in examining the urine of a woman who was not suckling, and was kept on very low and sparing diet, on the third, fourth, sixth, and ninth days after delivery, he found a large quantity of butyric acid taken up by ether from the solid residue; and on dissolving the ethereal extract in water, adding sulphuric acid, and distilling, he obtained a further quantity. The urine in this case was always rather turbid, of a dirty yellow colour, very acid, and contained a very small amount of uric acid.

Moller‡ relates two cases in which the urine of women who were not pregnant was covered with a film exactly resembling kystein: in one case there was considerable hypertrophy of the uterus; in the other, no affection of the generative organs could be detected. The film of kystein consists, according to his observations, of fat, earthy phosphates, and a caseous matter, which differs, however, from the casein of milk in being held in solution by a free acid. When the urine becomes neutral or alkaline, the caseous matter ceases to be held in solution, and separates as kystein. Everything checking the decomposition of the urine hinders the formation of the pellicle, and if the recent secretion is treated with a free acid (mineral or organic) no separation of kystein takes place even if ammonia be added to saturation, or decomposition allowed to proceed to any extent.

In a case of decided pregnancy, no kystein was formed during the period of a severe cold, attended with a copious deposition of urates; but

* [A similar appearance has been observed by Prout in the urine of a delicate child, fed chiefly on milk. (On Stomach and Renal Diseases, 4th edit. p. 555, note.)]

† Lehrbuch der physiologischen Chemie, vol. 1, p. 252.

‡ Casper's Wochenschr. Jan. 11-18, 1845.

when the urine became natural, the kystein reappeared. He twice detected cholesterin in kystein.

Kleybolte* has examined the urine in ten cases of pregnancy, and invariably found kystein on the fifth day. The morning secretion was used, and, after being slightly covered to protect it from dust, was allowed to stand, at an ordinary temperature, for ten days. The following appearances were observed in the tenth week of pregnancy: urine peculiarly yellow, with a greenish tint. Second day, mucous sediment; third day, no change; fourth day, turbidity ascending from the bottom; fifth day, white points and leaflets on the surface, turbidity ascending from all parts of the bottom, and the sediment almost gone; sixth day, kystein distinctly observed on the surface, like lumps of fat on the surface of cold broth; seventh day, no change. From the eighth to the tenth day, the kystein disappears, the turbidity again descends, and the sediment noticed on the second day is reproduced. The nine remaining cases are in most respects similar to the above.

A few observations on kystein have been reeently published by Audouard,† but contain nothing of importance, except that in six specimens of urine passed by young women suffering from amenorrhea, he found kystein in five.‡

38. *Urinary deposits.*—The following observations by Heintz are deserving of an attentive perusal. He observes that uric-acid deposits separate in two forms, one of which appears in distinct crystals, the other subsides from the urine as a very fine amorphous powder, which is dissolved by boiling, but again deposited on cooling, and is usually of a reddish, more rarely a white colour. Although the latter deposit has been much examined, we are still in considerable doubt as to its nature; the usually received view is, either that it consists of uric acid and ammonia, and contains in addition a small quantity of a colouring matter, or that it is amorphous uric acid. Since uric acid, according to Liebig, is soluble in phosphate of soda, it might equally be supposed that a portion of the uric acid would be deposited on cooling, as that the acid phosphate of soda formed should remain in solution, whilst acid urate of soda was deposited. The decision of this question is rendered much more difficult by the ordinarily small quantity of the deposit which is formed; on washing this, the greater part is redissolved; and finally, it cannot be freed from the adhering colouring matter without great difficulty, if at all. In its examination the author proceeds as follows:

"The fresh urine was immediately filtered, or, when the deposit had already formed, was warmed and filtered hot. The reddish-coloured powder, which subsided on cooling, was filtered and washed until the liquid which passed through ceascd to contain any urinary ingredients. The powder thus obtained was treated with potash in a watch-glass whilst still moist. A glass rod, moistened with muriatic acid, and held over it, gave distinct clouds of muriate of ammonia in every case, so that the presence of ammonia in these deposits may be regarded as proved. Another portion of the sediment was incinerated. The amount of ash was rather variable, amounting to from 2·98 to 8·02 per cent. This was exhausted with a small quantity of boiling water, and the alkaline solution filtered and evaporated

* Casper's Wochenschrift, April 26, 1845. † Journal de Chimie Méd. May 1845.

‡ Many other communications have recently been published on this subject, which I do not deem necessary to notice, as they are, for the most part, simply confirmatory of the above observations.

to dryness. The residue was heated with a few drops of water, then warmed, and a few drops of muriatic acid added. The author constantly observed an effervescence, although slight;—a proof that the dissolved bases before the combustion of the substances were combined with organic acids. In the residue of the evaporated liquid, soda was distinctly detected by the blowpipe; potash was undoubtedly detected twice by chloride of platinum, although in very small quantity.

"The portion of the ash insoluble in water was treated with muriatic acid, in which it dissolved with effervescence, the solution was rendered ammonical, and a solution of oxalic acid added to the liquid which had remained clear; this constantly caused a precipitate of oxalate of lime. The liquor filtered from this yielded in one case with phosphate of soda a slight precipitate of ammonio-phosphate of magnesia. Neither muriatic, sulphuric, nor phosphoric acid were ever detected in the ash.

"From these experiments it is evident that the above sediment constantly contains the bases ammonia, soda and lime, sometimes also potash and magnesia; these are combined with an organic acid, which is evidently the uric. The organic acid could not be the lactic, because this forms more soluble salts. The quantity of the red colouring matter, even supposing it to be an acid, would not be sufficient to saturate such an amount of base; moreover, the author found the largest quantity of ash (8·02 per cent.) in a deposit which was quite white. The next question is, whether in this deposit the whole of the uric acid is combined with bases, or is partly free. This question cannot be decided by a simple analysis, because we cannot completely free the deposit from the colouring matter.

"Becquerel, who with Quevenne considers this urinary deposit as amorphous uric acid, gives the following reasons for so doing:—When the sediment is separated by filtration from the urine, washed several times with water, and finally with alcohol, and treated on an object-glass with muriatic acid, its form is not in the least altered, whilst if it were a urate, uric acid should be separated in crystals. Becquerel has observed this to occur several times, but only partially, and then he says it was mixed with urate of ammonia.

"The author, however, found that when dried urate of ammonia, which was crystallized in fine needles, was treated under the microscope with dilute muriatic acid, at first no change could be perceived; gradually the needles became somewhat broader, without, however, the uric acid which separated assuming the ordinary form which it exhibited when it subsided immediately from the liquid. If muriatic acid diluted with alcohol be used instead of that diluted with water, the acid acts still more slowly; the uric acid, however, then subsides in the amorphous form. The sediment from the urine behaves in the same manner, as also the artificially prepared amorphous salt of urate of soda and ammonia. Consequently we can place no value on Becquerel's statement, that this sediment is composed of amorphous uric acid.

"The author could not succeed in proving with certainty that the amorphous deposit does not contain any free uric acid as well as urates, but this may be supposed with great probability.

"When a urine in which an amorphous deposit has formed is filtered, and a little pure uric acid added to the liquid, which is then warmed, a considerable quantity of it is dissolved, and subsides on cooling in the form of amorphous urate of ammonia.

"The question then is, how can it be explained, that when urine is re-

peatedly boiled with uric acid, some of it is each time dissolved, and on cooling a urate is deposited? If we suppose that the artificial deposit, which has subsided after the first ebullition of the urine with uric acid, has converted the phosphate of soda contained in it almost completely into acid phosphate, this cannot certainly as such yield any amount more of its base to uric acid. But as the urine contains urea, which yields ammonia on its decomposition, either at the ordinary temperature or by ebullition, phosphate of soda and ammonia must be formed, which is now capable of again dissolving uric acid. If there were not in the urine a constant source of the formation of this base, the above experiment would be of considerable importance in the decision of this question.

"We know that when uric acid is precipitated from a solution of its salts by means of an acid, we constantly obtain crystalline uric acid, however quickly the precipitation occurs. Now, since the deposit from the urine subsides but slowly, we cannot see why the uric acid is here precipitated in an amorphous form. It might be urged, that the urinary colouring matter prevented the crystallization; but we very frequently find crystalline uric acid, which is likewise coloured by the colouring matter, and forms a sediment in the urine. Nay, even in the amorphous sediment we frequently find a few crystals of uric acid. Finally, when the uric acid is separated from the urine, or, in favorable circumstances, by an acid from the deposit, it falls in a crystalline state, and is coloured.

"Although it has been sufficiently proved, by what we have stated, that the uric acid does not separate in the amorphous form, we have to inquire why the urate of ammonia, which can likewise be obtained in the crystalline state, does so. As regards the urate of lime, this subsides in a state of purity from water in this form. Dr. Bence Jones has advanced an explanation of this point, which is confirmed for the most part by the experiments of the author. Thus he found that when urate of ammonia is dissolved in water, and treated with a solution of other salts, as acetate or muriate of ammonia, it subsides in an amorphous form. It likewise separates from chloride of sodium in an amorphous form, but is dissolved in larger quantity by it than by the former saline solutions. Bence Jones considers the salt which separates from solution of chloride of sodium as urate of ammonia. The author, however, found both soda and ammonia in it, and hence at first supposed that the uric acid had formed a double salt of soda and ammonia, a corresponding amount of muriate of ammonia being produced.

"To examine this salt more accurately, the author added sulphuric acid to it, heated it to redness, and estimated the residue as sulphate of soda. But the quantity of soda obtained from it varied in five specimens from 12·73 to 14·79 per cent. A salt, which was obtained in the form of fine needles, by boiling an ammoniacal solution of common salt with uric acid, and allowing the filtered liquid to cool, yielded only 4·79 per cent. of soda.

"To ascertain the true composition of this compound, the author adopted the following method:—A weighed quantity of the salt, which had been dried at 212°, was treated with hot dilute muriatic acid, and the solution evaporated at a moderate heat to a small bulk. After it had cooled, about five times its volume of absolute alcohol was added, so as to produce a liquid in which uric acid is completely insoluble, whilst chloride of sodium and ammonium are dissolved by it. The uric acid was filtered, washed with alcohol, dried at 212°, and weighed.

"The muriate of ammonia was precipitated from the filtered solution by

chloride of platinum, the liquid filtered, evaporated, and heated to low redness, to separate the platinum. The heated mass was then treated with water, the solution evaporated, and the residue heated to redness and weighed. Moreover, the author controlled these analyses by ascertaining the increase in weight of the salt evaporated with the water acidulated with muriatic acid, and by a nitrogen analysis. No ammonia was evolved on drying at 212°. The analyses yielded:

	1.	2.	3.	4.		
Uric acid .	81·20	81·82	81·75	81·81	2	80·73
Ammonia .	0·09	0·95	0·60	1·41	1	14·96
Soda .	14·92	14·27	14·41	12·64		
Water .	3·79	2·96	3·24	4·14	1	4·31

The above-mentioned salt, which crystallized in needles, and had yielded 4·81 per cent. of soda, consisted of—

Uric acid . .	88·35
Ammonia . .	6·31
Soda . .	4·74
Water . .	0·60

Consequently this composition cannot be expressed by a simple formula, since it contains much more uric acid than the quantity of bases obtained is sufficient to combine with. It must however be remarked that almost all the water escapes from this salt at 212° whilst in the above-mentioned compound 1 atom remains. There is however no doubt, from the analysis of this salt, that its composition is different from that of the above-mentioned soda salt. Should it be required therefore to prepare the amorphous salt again, uric acid must not be treated with an ammoniacal solution of chloride of sodium, but urate of ammonia, with the saline solution. The stronger the solution of chloride of sodium used, the more soda is contained in the compound which separates. The author also succeeded in procuring this compound by digesting a solution of common salt, which had been triturated with finely-powdered uric acid, for several days in the cold with dilute solution of ammonia. The whole of the uric acid is thus converted into an amorphous powder, and when the amount of liquid is increased, contains the uric acid, soda, ammonia, and water in somewhat larger globules. This constantly happens in the urine; consequently both salts must separate from it in the above forms.

"The salt obtained by digestion in the cold contained—

	1.	2.
Uric acid . .	81·43	80·73
Ammonia . .	0·35	
Soda . .	13·79	14·96
Water . .	4·43	4·31

Golding Bird dissolved phosphate of soda in water, added uric acid to the solution, and dissolved it in it by the application of heat. After filtering, a salt separated on cooling consisting of prisms united into stellæ and bundles, which were not soluble in boiling water, and left a residue on incineration. The author's experiments yielded the same results; the crystals were not altered in form by muriatic acid, but became slightly opake; some of them disappeared without any crystals of chloride being formed. His results, on analysing the ash of this compound, were entirely different. According to Golding Bird, the residue obtained by digesting

the crystals with muriatic acid and incinerating in a platinum spoon, consisted of phosphate of soda. The author, however, on incineration of the pure well-washed salt, obtained a white fused residue, which dissolved in water, effervesced with acids, and at the same time evolved the odour which is set free when a cyanate is treated with an acid. It contained no phosphoric acid; consequently the salt was not a compound of uric acid with phosphate of soda, as Golding Bird supposes, but a soda salt of this acid.

"When the author heated the liquid filtered from the above compound several times with uric acid, and filtered it whilst hot, a slight deposit subsided, which when washed and incinerated likewise left an ash containing soda, but in small quantity. When this was repeated with the liquid, which had been again filtered, tolerably pure uric acid was at last obtained, which left barely a trace of a fixed salt when incinerated. The form of the crystals was most similar to that in which uric acid usually occurs in the urine.

"The phosphate of soda and ammonia acts in the same way as the phosphate of soda, as stated by Golding Bird, except that the deposit first formed consists of urate of ammonia, with but little urate of soda. Finally, however, almost pure uric acid subsides. Hence phosphate of soda and of soda and ammonia are partly decomposed by uric acid, so that on cooling the base remains in combination with the uric acid, which separates; but when a certain amount of the base has separated from the solution, on the application of heat the uric acid dissolves, and on cooling again subsides as free uric acid; consequently a deposit of pure crystallized uric acid must occur in the urine when it contains very acid phosphates, of course supposing that sufficient of the acid exists in the urine. In fact, the urine is always very strongly acid when it contains a deposit of crystallized uric acid. The less acid the phosphate dissolved in it, so much the more base will the uric acid which subsides contain; until at last the deposit continuing to crystallize when the proportion is 2 equiv. of base to 1 phosphoric acid, contains the largest quantity of base.

"Since urine, as we have stated above, which has deposited the amorphous sediment, when warmed with uric acid and then filtered, can deposit a similar sediment, which contains considerable amounts of fixed bases, it is evident that the amorphous deposit must be formed in the urine when more than 2 equiv. of base are combined in it with 1 equiv. of phosphoric acid. In fact, an experiment showed that when a solution of phosphate of soda was boiled for some time with urate of ammonia, and the liquid, which was then neutral or slightly alkaline, was filtered, after some time a deposit was formed, which was completely amorphous: it however adhered to the bottom of the vessel, and appeared under the microscope as consisting of tolerably large globules. This salt evidently corresponds to the amorphous urinary sediment which we often find in urine, particularly when ammoniacal. Another mode of formation of this salt may still be given. Thus, if crystals of uric acid have subsided from an acid urine, and if this urine speedily becomes alkaline from the rapid decomposition of the urea, the crystals are gradually formed in the above globules. They may also be artificially produced, by rendering the urine, in which crystals of uric acid have been deposited, slightly ammoniacal.

"It has been stated above, that when pure uric acid is treated with solution of chloride of sodium and a little ammonia, an amorphous salt, in smaller or larger globules, is formed, which has exactly the same composition as that which is formed when urate of ammonia is dissolved in a si-

milar solution of chloride of sodium. Hence it appears that the amorphous deposit occurring in the urine, which likewise forms large globules, consists of an admixture of urate of ammonia and urate of soda. The author endeavoured to purify the deposit which occurs in the urine, by adding to it a small quantity of acid (by which it is not dissolved except after a considerable time, whilst the phosphates mixed with it are immediately dissolved), and then, after the deposit has subsided, pouring off the clear fluid, and rapidly filtering and washing. In most cases the filtration was prevented by the mucus, so that the deposit had time to dissolve completely; twice only could it be purified in this way. It contained a large quantity of ammonia, and gave on incineration 1·75 to 1·72 per cent. of ash, which contained a little phosphate of lime as well as soda. As the finely-pulverulent deposit forms in acid urine only, it appears allowable to suppose, that for this such a degree of saturation of the phosphoric acid occurring in the urine is necessary, that more than two but less than three atoms of base are combined with it, whereby the acid reaction can be readily explained by means of the uric acid dissolved in it. The author endeavoured to procure such a fluid, by dissolving uric acid and urate of ammonia at the same time in phosphate of soda, or by adding a very small quantity of muriatic acid to the mixture of the urate of ammonia with a solution of this salt, and filtering the warm liquid. In these cases, however, large globules mixed with uric acid were constantly formed. When chloride of sodium was now added to the liquid, the author frequently obtained a powder exactly similar to the amorphous sediment, and which always adhered somewhat firmly to the sides of the vessel, as we frequently find in urinary deposits.

"The common occurrence of uric acid and urates in the urine is explained from the fact, that crystals and an amorphous powder frequently subside together, as in the above case. This may occur when but little more than two equivalents of base are combined with one of acid. However, urine, which at first is strongly acid, and deposits uric acid, may be so soon neutralized by the decomposition of the urea, that the amorphous deposit is formed.

"The author only obtained the amorphous precipitate with certainty when he added a drop of very dilute acid to the globular deposit; and we know many urines behave in the same manner from which no deposit spontaneously subsides. In this case the acid added, extracts a portion of the base from the phosphate of soda, so that it cannot dissolve any more uric acid; but this, if too much acid be not added, subsides in the form of urate.

"When urate of ammonia was dissolved in a solution of chloride of sodium and phosphate of soda, to which a drop of a dilute solution of chloride of calcium had been added, the filtered slightly acid liquid on cooling constantly deposited an extremely fine amorphous powder, which readily dissolved when heated, but on cooling subsided in the same form, and contained lime as well as ammonia and soda. The above-mentioned pulverulent urinary deposit has the same properties and is composed of the same ingredients; and the cause of its separation as a fine amorphous powder is sufficiently explained by this experiment. It depends upon the simultaneous precipitation of these three salts; the lime salt always separates in the form of an amorphous powder; the ammonia and soda salt do so frequently when chloride of sodium is present."*

* Muller's Archiv, 1845. Translated in the Chemical Gazette.

39. *Urinary calculi.*—In one of Liebig's lectures on organic chemistry now appearing in the 'Lancet,' there are some excellent remarks on the formation and discrimination of urinary calculi. We present them here in a somewhat abbreviated state.

"Uric acid is always present, to a small amount, in the normal urine of man. It is partly to its presence that this fluid owes its well-known acid reaction. In unhealthy conditions of the organism, the proportion of uric acid in the urine is greatly augmented, and accumulating in the bladder, it gives rise to the formation of stones, or calculi. But, in addition to uric acid, there are other matters which enter into the composition, or altogether constitute those concretions which claim our attention, and amongst these are two organic substances particularly deserving of a minute consideration, as an appendix to our exposition of the series of bodies formed from uric acid—namely, *Cystic Oxide*, and *Uric Oxide*, or *Cystine* and *Xanthine*. I shall, moreover, take the opportunity of this lecture to treat of the subject generally, and include those urinary concretions which consist of inorganic matters.

"Under the names urinary concretions, or calculi (for these terms are synonymous), are comprised all substances devoid of organization found detached in the urinary bladder. Similar concretions, indeed, are also formed in other animal fluids, as the bile and the saliva. Wherever they are produced, they may arise from very various causes.

"Most of the fluids of the animal body, but more especially those destined to be evacuated from the system, hold in solution certain compounds, which are kept dissolved only by very weak affinities, and therefore, as soon as the fluid has left the body, they become deposited in a solid form. When, therefore, these fluids are retained longer than is ordinarily the case, or when, in consequence of unhealthy conditions of the organism, these matters, which, in the normal state, exist only in minute quantities, are produced in larger proportions, they deposit themselves in a solid form, and the process being frequently repeated, concretions are formed, and, as we are now contemplating especially the case of the urine, are deposited in the bladder. In this manner those calculi are generated which consist of uric acid and the urates.

"Calculi may, however, be formed, when neither the proportionate amount of solid matter in solution is increased, nor the fluid retained a longer time than natural in the bladder, because the urine may, from various causes, undergo such a change in its constitution, that those conditions essential to the solubility of certain compounds may be absent, and consequently these compounds necessarily become precipitated.

"Phosphate of lime is perfectly insoluble in pure water; its solubility in urine depends upon the existence of free acid in that fluid. If, from any cause, the urine becomes alkaline, as, for instance, when organic salts with alkaline bases are taken into the stomach, which, as is well known, are converted into carbonates during their passage through the organism, then the conditions essential to the solubility of phosphate of lime are removed, and this salt is precipitated. All calculi consisting of phosphate of lime are produced in this manner.

"The calculi containing ammoniaco-magnesian phosphate are also produced in a manner precisely analogous to this. In many animal fluids, particularly the urine, phosphate of magnesia is found in solution. Normal urine contains no ammonia, but when from any cause ammonia is generated, the phosphate of magnesia no longer remains in solution, but is precipitated as ammonio-phosphate of magnesia.

"Beside the foregoing, there is another cause of the formation of urinary concretions. In diseased conditions of the system, peculiar compounds are not unfrequently formed which are never produced in the healthy organism, and being perfectly insoluble in urine, are immediately deposited in a solid form from that fluid. In this manner oxalate of lime calculi are formed, and those concretions of organic matter termed cystic oxide and xanthic oxide.

"But beyond these chemical causes of calculi, certain mechanical conditions have almost always more or less influence upon their formation in the urinary bladder. When any of these states exist, and, in consequence, deposits occur of uric acid, urates, insoluble phosphates, oxalate of lime, &c. in small quantities, it does not necessarily happen that calculi are formed, but, in most cases, the urine flowing off, carries with it through the urethra the sediments suspended in it, or already deposited. When, however, the bladder contains mucus, these sediments are apt to adhere to it, and become united into masses. Very often a foreign body, which has accidentally got into the bladder, forms the nucleus upon which these sediments are deposited, and to which they adhere; the irritation they occasion on the internal surface of the bladder induces the secretion of mucus in which the urinary deposits accumulate, and they thus become the direct cause of the formation of calculi.

"The calculi formed in the human bladder differ, therefore, in their composition; and whilst there is a great variety, the following may be taken as characteristic of most of them:

"1°	calculi, composed of	Uric acid.
2	,,	Urate of ammonia.
3	,,	Oxalate of lime.
4	,,	Phosphate of lime.
5	,,	Ammonio-phosphate of magnesia.
6	,,	A mixture of phosphate of lime and ammonio-phosphate of magnesia.
7	,,	Cystic oxide, or cystin.
8	,,	Uric or xanthic oxide, or xanthine.

40. "*Uric acid calculi.*—The calculi which are most frequently found in the bladder are those composed chiefly of uric acid. They are generally of a reddish-brown or yellowish colour, which is derived from the colouring matter of the urine. Their surface is sometimes smooth, sometimes rough; their size, of course, very variable. The fracture of these calculi sometimes presents a crystalline texture; at others, it is smooth, and often they are made up of concentric layers. They are rather hard, so that they may be just scraped with a knife. Calculi are never composed of perfectly pure uric acid; they always contain hardened mucus, which binds the uric acid together, and small quantities of alkaline urates, urate of lime, phosphate of lime, and ammonio-phosphate of magnesia in admixture. In the inverse proportion to the prevalence of these impurities, these calculi present the characteristic properties of uric acid. The test is nitric acid, and the best way to apply it is to place a fragment of the calculus to be examined upon a platinum spatula, and drop upon it some common nitric acid. When uric acid is present, a lively effervescence ensues. Evaporate the resulting solution by a low heat, and add ammonia, when a purple colour is produced, characteristic of the presence of uric acid.

41. "*Urate of ammonia calculi.*—Calculi composed of urate of ammonia are of much rarer occurrence than the former, particularly in a pure state.

They are generally to be found in children. They present various shades of colour, between a whitish-gray and a light-brown: they have usually a smooth surface and earthy fracture, and are made up of concentric layers, which are easily separated from each other. They very seldom occur pure, commonly containing uric acid and small quantities of the phosphates. It is very easy to distinguish these calculi from those composed of uric acid. They dissolve in boiling water, except there are admixtures of other substances, whilst uric acid is very slightly soluble. When you have examined a calculus, and proved it to contain uric acid, and it also yields ammonia when treated with potass, this must not be supposed to prove that it is urate of ammonia; the generation of ammonia may also arise from the decomposition of ammonio-phosphate of magnesia present in the calculus.

42. "*Oxalate of lime calculi.*—Urinary concretions which consist of oxalate of lime occur frequently. They are distinguished by their external appearance: those with a rugged surface, dark colour, and larger size, are termed *mulberry calculi*, whilst smaller ones, with a smooth surface, are known as *hemp-seed calculi*. These calculi are always very hard, and imperfectly laminated. They almost invariably contain small quantities of uric acid, phosphates, and animal matter of uncertain composition. They are insoluble in water and alkaline fluids, but generally dissolve completely in acids. The mulberry calculi are easily distinguished by their behaviour before the blowpipe: the oxalate of lime is converted into a carbonate by heat, and this latter salt loses its carbonic acid at a higher temperature, and becomes caustic lime. After being subjected to the action of the blowpipe, therefore, mulberry calculi may be slaked by water, and impart to it an alkaline reaction. As, however, many calculi contain some amount of carbonate of lime, which, if submitted to the above process would produce the same result,—namely, a residuum, which slakes on the application of water,—you should never omit the employment of the usual tests for the presence of oxalic acid. For this purpose the calculus is to be pulverized, and boiled with carbonate of potass; by this means carbonate of lime and oxalate of potass will be formed; filter, and add an excess of acetic acid to the filtrate, to decompose the surplus of carbonate of potass, then, if a solution of sulphate of lime be added, oxalate of lime will be precipitated.

43. "*Phosphate of lime calculi.*—Calculi composed of phosphate of lime are very rare. Up to the present moment no one has had an opportunity of examining such except Dr. Wollaston. Those which he has described had a smooth surface and a chalky fracture, in which distinct layers could be perceived. They contained an organic matter, by which the phosphate of lime was agglutinated, and they consequently became black before the blowpipe. By the continued application of heat they again became white, and finally fused.

44. "*Ammonio-phosphate of magnesia calculi.**—Those calculi which consist of ammonio-phosphate of magnesia are met with frequently, but those in which this double salt is combined with phosphate of lime are still more common. Both these species of concretion are similar in appearance; their surface is generally rough, and they have internally an earthy or chalky appearance, very rarely exhibiting a crystalline structure. Sometimes, however, they are covered with crystals externally, and occasionally cavities are found in them filled with crystallized ammonio-phosphate of magnesia. There is little difficulty in recognizing these calculi, or in discriminating between the two kinds, notwithstanding the similarity of their external ap-

* Synonymous with ammoniaco-magnesian phosphate.

pearance. Ammonia is evolved from both kinds when acted on by caustic potash. Both dissolve readily in nitric and muriatic acids. To an acid solution ammonia is first to be added, until a feeble alkaline reaction is exhibited, when a slight precipitate forms; then acetic acid, until the precipitate disappears. The addition of chloride of iron, and boiling the solution, causes all the phosphoric acid to be deposited in the form of phosphate of iron. The filtered liquid is then to be tested in the ordinary manner for lime and for magnesia.

"We now arrive at those urinary concretions which contain certain peculiar organic substances; of these there are two species; and it is both interesting and useful to become acquainted with their composition and properties. These calculi occur but very rarely. One of these species of calculi, however, has been observed more frequently in France. It was originally discovered by Dr. Wollaston, and is called cystic oxide, or cystin. It contains, as a constituent, sulphur.

45. "*Cystin calculi.*—Cystic oxide calculi are of rare occurrence; they consist of somewhat compact crystalline masses, of a yellowish or greenish colour, and smooth surface. They may be broken into fragments without difficulty; their fracture is crystalline, with the lustre of wax, and their fragments are translucent at their angles. Such calculi generally consist of pure cystin; sometimes, however, their surface is coated with phosphates.

"Urinary calculi composed of cystin are readily soluble in the fixed alkalies and in ammonia. They are thus distinguished from those consisting of phosphate of lime, oxalate of lime, or phosphate of magnesia, these being insoluble in ammonia; whilst they are distinguished from those containing uric acid by their solubility in acids.

"In order to detect the presence of cystin, the suspected calculus is to be dissolved in a strong solution of caustic potass, and a few drops of solution of acetate of lead added in excess; the liquid is then heated to boiling. If cystin be present, insoluble sulphuret of lead is formed, and precipitates, and oxalate of ammonia remains in solution. This method may be advantageously employed to test both calculi and urinary deposits for cystic oxide.

46. "*Xanthine calculi.*—But there is another species of calculi consisting of a peculiar organic substance, quite different in constitution to cystin. This was discovered by Marcet, and has been termed, *xanthic oxide*, xanthine, uric oxide, and urous acid. The designation, xanthine, appears to be preferable, and by this we shall continue to speak of it.

"The calculi containing xanthine are as rare as those with cystin;* their surface is generally smooth and shining, of a whitish colour, but sometimes without lustre; they are rather hard, and their fracture exhibits a brownish flesh colour; they consist of concentric layers without any appearance of a crystalline formation. When rubbed or scraped, they acquire the lustre of wax. These calculi show a very characteristic reaction with nitric acid. This acid dissolves them at the boiling point without the evolution of gas. This distinguishes them perfectly from uric acid calculi. The solution of nitric acid being evaporated, leaves a citron-yellow residue, soluble in caustic potass, and in this menstruum acquiring a reddish-yellow tint. The characteristic purple colour which uric acid gives with nitric acid and ammonia, cannot in any way be produced with xanthine."

47. *Urostealith.*—Urostealith is most readily detected by the effects of heat and combustion. A small piece, placed on platinum foil and heated,

* [Much rarer; only four cases are on record. ED.]

remains for some time solid, then commences to fuse without melting, burns rapidly, and diffuses at first a tolerably strong vapour and very peculiar and agreeable odour, which most resembles that of shell-lac and benzoin. The odour is so strong that the smallest piece is sufficient to allow of its being distinctly perceptible. With a stronger heat, the urostealith inflames and burns with a bright yellow flame. If the remaining voluminous cinder be completely incinerated, a small alkaline residue is left.

"When boiled with water, urostealith becomes soft, swells slightly, is compressible and friable. Warm alcohol dissolves it, but with difficulty; when the alcohol is evaporated and the residue incinerated, the above-described agreeable odour becomes perceptible. Ether dissolves it with tolerable ease; if the ether be evaporated, the urostealith is left in the amorphous state; on continuing a gentle heat, it becomes coloured of a tolerably deep violet. Solution of caustic potash dissolves it readily by heat with a brownish-yellow colour; if the watery part of the solution be allowed to evaporate, a quantity of brown flocks are deposited, which are again dissolved on the fresh addition of the solvent. The product is a brown soft soap, which can be kneaded like wax, and is soluble in water. Its clear alkaline solution is decomposed by acids, and the urostealith again separates as an amorphous fat. The carbonates of soda and potash act in the same manner as the caustic potash, except that their action occurs more slowly. When the soap is treated with ammonia this does not assume so brown a colour as when the urostealith is dissolved in urine. Even boiling ammonia has but little action on it; it swells, becomes soft, and saponifies but very imperfectly, the liquid becoming very slightly brownish. When heated with nitric acid, it yields a solution which is almost colourless, nitrous acid being slightly evolved. If the product is evaporated and the residue treated with ammonia, it assumes a dark-yellow colour, similar, but in a less degree, to that produced by caustic potash."*

§ VI.—*Fæces.*

48. *Fæces.*—Enderlin has instituted numerous observations on human fæces, chiefly in reference to the salts.

A. Fresh excrements of a yellowish-brown colour, pulpy appearance and an alkaline reaction, were dried and incinerated. The resulting ash was white, alkaline, effervesced on the addition of an acid, and contained,

Tribasic phosphate of soda (a little),
Chloride of sodium.
Alkaline sulphates.
Phosphates of lime and magnesia (in abundance).
Carbonate and sulphate of lime.
Phosphate of iron (a trace).

B. Another portion of the same excrement was extracted with water, and the brown alkaline solution evaporated on the water-bath.

During the process of evaporation there was formed on the surface a tenacious, yellowish-brown film, which, when removed, was speedily replaced.

a. One half of the evaporated aqueous extract was incinerated. The ash was very alkaline, effervesced briskly on the addition of an acid, and contained:

* Archiv für Physiol. und Path. Chem., 1845.

Alkaline carbonates.
Alkaline sulphates.
Alkaline phosphates.
Chloride of sodium and earthy phosphates.

b. The other half of the evaporated aqueous extract was treated with alcohol, which assumed a tint varying from a red to a green, and had an alkaline reaction. On evaporating the alcoholic solution, an alkaline ash was obtained, consisting, for the most part, of tribasic phosphate of soda and chloride of sodium.

The membrane and other matters not taken up by alcohol, yielded a neutral ash consisting of phosphates of lime and magnesia, with traces of chloride of sodium and alkaline phosphates.

c. The portion of excrement not taken up by water, yielded a neutral ash consisting of:

Phosphates of lime and magnesia.
Sulphate of lime.
Traces of chloride of sodium and alkaline phosphates.

With a solution of baryta, the alcoholic solution yielded a very bulky, yellowish-green precipitate; and, on the addition of basic acetate of lead, there was a considerable sediment soluble in acetic acid, decolorization of the fluid, &c.: hence unchanged choleate of soda was present. The occurrence of this constituent was, however, by no means invariable; and, generally speaking, choleate of soda (or bile) may be expected to be absent when the fæces have remained for some time in the large intestine, and there has been full opportunity for resorption.

It follows that the carbonate of lime is a product of the double decomposition that occurs between the sulphate of lime and the carbonate of soda resulting from the incinerated choleate of soda, or bile.

The formation of the membrane during evaporation indicates the presence of a certain amount of albumen.

In 100 parts of the ash yielded by the excrement of another individual, there were contained:

Chloride of sodium and alkaline sulphates	1·367	soluble in water.
Bibasic phosphate of soda	2·633	
Phosphates of lime and magnesia	80·372	insoluble in water.
Phosphate of iron	2·090	
Sulphate of lime	4·530	
Silica	7·940	
	98·932	

From the absence of carbonate of lime in this instance, it may be concluded that no choleate of soda or bile was present. The excrement was very firm and solid.

I am indebted to the kindness of Dr. Percy for the following analyses of the fæces.

1. The individual, who was about thirty years of age, had taken the ordinary diet of this country, and appeared to be in the enjoyment of perfect health.

In 100 parts of dried residue there were contained:

Substances soluble in ether (brownish yellow fat) .	11·95
,, in alcohol of ·830 . .	10·74
,, in water (brown resinoid matter) .	11·61
Organic matter insoluble in the above menstrua .	49·33
Salts soluble in water	4·76
Salts insoluble in water	11·61

An ultimate analysis of the fæces in this case was also instituted. "I may here premise," says Dr. Percy, "that I have invariably used chromate of lead as the oxidising body, and have occasionally sheathed the combustion tube with thin sheet copper, in order to enable me to attain a high degree of heat towards the close of the combustion, a precaution essentially necessary in the analysis of these matters, as the last trace of carbon cannot, without this precaution, be completely burned. In corroboration of this statement I may mention that the perfect incineration of fæces at a red heat requires a considerable time. The matter was prepared for analysis by first drying over the water-bath, and then either in an oven at the temperature of 212° or some degrees above, or in the salt-water bath and by a current of air desiccated by chloride of calcium. I was extremely particular in respect to the drying, and, generally, in a second analysis, employed matter which had been subjected to the drying process for a much longer time than in the first, so that the correctness of the proportion of hydrogen should be satisfactorily tested.

1st Analysis: 7·41 grs. gave—of HO 4·23 or of H 6·64%, of CO_2, 12·55 or of C 46·18%.

2d Analysis: 7·24 grs. gave—of HO 4·44 or of H 6·81%, of CO_2, 12·28 or of C 46·23%.

Incineration: 50·13 grs. gave—of ash 8·21, or 16·37%.
Nitrogen—not yet determined.

Taking the mean, we have:

C . .	46·20	100·00
H . . .	6·72	
N & O .	30·71	
Ash . .	16·37	

"These results are very nearly the same as those obtained by Dr. Playfair,* at Giessen. His analysis gives C 45·24, H 6·88, N & O 34·73, ash 13·15. These facts are worthy of attention, as they seem to show that, under ordinary circumstances of health, the composition of the fæces is more uniform than we might *à priori* have anticipated. The first analysis, it will be borne in mind, was of the fæces of a man in this country; the second, of a soldier at Giessen.

2. "A man undergoing the curious and rigorous discipline of training for prize-fighting. This individual, it will not be doubted, was in the possession of the most perfect health. He had been in training for about a week. Age 22; height 5 ft. 6 in.; weight 8½ stones. I request particular attention to the diet. He breakfasted at 9 a.m., and took one pound of mutton weighed before cooking. He dined at 1 p.m., took the same quantity of mutton, and about two ounces of bread. He had the same quantity of mutton for supper at 8 p.m. At each meal he drank half a pint of ale, and no other liquid during the day; nor, it must be remem-

* Liebig's Animal Chemistry, 2d ed. p. 285.

bcred, had he any other vegetable matter besides the small quantity of bread mentioned. He walked seventeen miles daily.

1st Analysis.

5·35 grs. gave—of HO 3·43 or H 7·12%, of CO_2 9·73 or C 49·60%.

2d Analysis:

5·74 grs. gave—of HO 3·62 or H 7·01%, of CO_2 10·52 or C 49·98%.

The difference between these two analyses, in rcspect to the carbon, is greater than should be allowed, but I had not time to make a third analysis.

Incineration: 31·42 grs. gave—of ash 4·56, or 14·51%.

Mean—C . . .	49·79	100·00
H . . .	7·06	
N & O . .	28·64	
Ash . . .	14·51	

" I should observe that, in drying this specimen, towards the end of the process a small quantity of liquid condensed on the surface of the tube communicating with the vessel of water which was clear and colourless, had a peculiar and extremely offensive odour, and which powerfully reddened litmus. I had not sufficient leisure to examine it more minutely at the time.*

Unfortunatcly we are precluded by want of space from quoting Dr. Percy's analyscs of the fæces in disease. The most important fact elicited was the large amount of fat dischargcd by stool in diabetes. A full account of these analyses will appear in the second volume of Simon's Animal Chemistry.†

§ VII.—*Bone.*

49. *Bone.*—An elaborate treatise on the chemistry of bone has been recently published by Von Bibra. We extract the following analyses:

	Female Fœtus at the 7th month.			
	Ulna.	Radius.	Scapula.	Clavicula.
Phosphate of lime with very little fluoride of calcium	57·63	57·67	57·13	56·95
Carbonate of limc	5·86	5·89	5·99	5·75
Phosphatc of magnesia	1·10	0·99	1·12	1·07
Salts	0·60	0·67	0·62	0·73
Cartilage	34·78	34·08	34·32	34·54
Fat	0·63	0·50	0·82	0·96

* I strongly suspected the matter to be butyric acid, and my suspicion has since been much strengthened by my examination of a specimen of pure butyric acid which I had an opportunity of seeing in London, at the Pharmaceutical Society. Besides, Dr. Erwin Waidele whom I had the pleasure of meeting at Professor Graham's, informed me that Dr. Ragsky of Vienna has discovered this acid in the fæces.

† The chemistry of the green evacuations occasionally passed by children is fully discussed in the 'Practical Medicine' department, pp. 46-50.

Child aged 9 months.

	Femur.	Humerus.	Tibia.	Radius.	Ulna.	Costa.	Scap.
Phosphate of lime with a little fluoride of calcium . . .	48·11	50·15	48·55	45·38	48·06	42·32	42·61
Carbonate of lime	6·12	6·13	5·79	5·14	6·20	5·00	5·08
Phosphate of magnesia . . .	0·97	1·00	1·00	0·93	1·01	0·89	0·92
Salts	1·23	1·30	1·24	1·07	1·24	1·09	1·10
Cartilage . . .	41·71	39·53	41·50	45·65	41·70	48·55	48·36
Fat	1·86	1·89	1·92	1·83	1·79	2·15	1·93

A man 25 or 30 years of age.

	Femur.	Tibia.	Humerus.	Ulna.	Os occip.	Costa.
Phosphate of lime with a little fluoride of calcium	59·63	58·95	59·87	59·30	58·43	55·66
Carbonate of lime . . .	7·33	7·08	7·76	7·35	8·00	6·64
Phosphate of magnesia .	1·32	1·30	1·09	1·35	1·40	1·07
Salts	0·69	0·70	0·72	0·73	0·90	0·62
Cartilage	29·70	30·42	29·28	29·98	29·92	33·97
Fat	1·33	1·55	1·28	1·29	1·35	2·04

§ VIII.—*Tubercle.*

50. *Tubercle.*—Amongst the contributions to chemical pathology which have been made since our last Report, may be mentioned Dr. Wright's essays on the 'Pathology of Expectoration.' These have been published in the 'Medical Times;' they are upwards of thirty in number, and constitute a most admirable addition to our store of knowledge in pathology and practical medicine. Dispersed as they are over many pages in different numbers of the periodical referred to, they are necessarily not easy of reference; and we trust, therefore, that Dr. Wright will see the necessity of shortly bringing them out in a separate form, so that they may be more readily within the reach of whosoever may require to consult them.

Dr. Wright's views on the pathology of tubercle are to some extent novel, and we think consistent with the most established facts of physiology, pathology, and chemistry. "In prosecuting this subject," he observes, "I find it most convenient to treat of tubercle according to what may be termed the natural history of its formation. This embraces two particular and definite stages, viz. its primitive, or developmental stage, and its matured, or complete stage; to which, however, may be added a third, not connected with the formative process of tubercle, viz. its softened or decomposing stage. By the term primitive stage, I mean that which is antecedent to the conversion of any, or all, of the tubercle into a yellowish, cheesy-looking, friable mass; the matured stage, which I believe to be the result, for the most part, of an imperfect and depraved organic action in the tubercular body itself, is indicated by the total conversion of this body into the mass whose appearance I have just described; the softened stage is consequent upon a play of chemical affinities amongst the ultimate constituents of the

tubercular matter, and represents various degrees of structural disintegration, fluidity, and rottenness."*

"Tubercular matter," he says, "may be formed either in the blood-vessels, or externally to them. But wherever tubercle is produced, the blood itself is essentially the source of it. In those cases, numerous enough, in which tubercle is discharged abundantly, and in a state of complete maturation, from the mucous membrane of the trachea, or bronchi, or bowels, without any lesion of these parts, such matter must have been formed and matured in the circulating system, whence it was eliminated as a foreign body by the most eligible outlet.†

" If we examine with a good microscope slices of the less diseased portions of the lung of a person who has died of phthisis, we generally recognize a great variety of elemental tubercular matter. The following are the chief of its appearances. Granules (resembling in aspect those of germinal cells and of pus-globules), varying from 1-800th to 1-1600th of a line in diameter; aggregated granules, easily detachable from each other, forming an opaque mulberry-shaped mass of variable size; cells, or vesicles, from 1-2500th to 1-1160th of an inch in diameter, of different degrees of transparency, density, and development, the complete ones consisting of an envelope and a contained albuminous fluid, with or without central or peripheral granules; and flakes or filaments of all shapes, apparently derived from ruptured vesicles. The cells or vesicles are often of larger size than those just mentioned, especially in the lungs, liver, and mesentery of tame rabbits (giving rise to the fanciful notion that they are hydatids) and in the scrofulous peritoneal deposits of pigs; but in the human subject they are rarely found of any magnitude. If the point of a very delicate needle, sufficiently heated, be passed into the interior of one of these transparent vesicular tubercles, it instantly becomes opaque throughout, from a coagulation of its albumen. This change also takes place spontaneously, at indefinite periods, after the development of the vesicular tubercles, commencing either at their circumference or their centre, and is generally the precedent of the phenomena of maturation. This opacity often occurs, and is not succeeded by any further change in the substance of the tubercular matter. Often the vesicular tubercle enlarges, so as to be readily visible by the naked eye, before becoming opaque, and as often this opacity occurs, the tubercle remaining microscopically small. Under other circumstances, the vesicular tubercle will gradually increase in solidity, and finally become firm and hard, whilst retaining, almost unimpaired, its original transparency. In this state it looks like a particle of very delicate horn. Vesicular tubercles are differently shaped; they vary with their locality; some are globular, some disc-like, some oval, and others irregularly angular. Occasionally, when the vesicular tubercle has not proceeded to the stage of maturation, but has had the watery part of its contents absorbed, the envelope shrinks, and consequently may become crenated, wrinkled, ragged, and variously misshapen.

As the process of tubercular deposition in the lungs is generally, to a certain extent, in conformity with the laws which determine the formation and regeneration of normal tissues, it not uncommonly happens that the tubercle attaches itself closely, and somewhat complicatedly, to the parenchymatous structure, and can only be separated from the latter by force, when it generally brings away with it a quantity of minute fibrous or mucous material, which gives to the circumference of the tubercle, when placed in water, a pilous appearance. This external covering was first described

* Med. Times, vol. xi, p. 77. † Loc. cit.

by Rochoux, who, however, erred in considering it an invariable occurrence, and an appendage *peculiar* to tubercle, instead of what it really is, an adventitious and only occasional attachment. Other appearances than those I have described as belonging to tubercle, appertain to its advanced stages, and are generally recognizable by the naked eye."*

Dr. Wright believes, with most other pathologists, that the formation of tubercle is due to an "error of nutrition," of which he thus speaks: "Mr. Addison says that 'tubercles of the lungs consist of matter accumulated by colourless blood-cells.' To this opinion I am not prepared to subscribe. Elementary granules may, by their aggregation and subsequent development, form colourless blood-corpuscles, pus-globules, or vesicular tubercles; but these are not convertible into each other,—they are specific structures, and cannot be transformed into any analogous structure; they can only advance or retrograde. Hence it may happen to the colourless corpuscles to form healthy tissue, whilst pus and tubercle, in every succeeding change, become more blighted and disorganized. A colourless blood-corpuscle can no more form a pus-globule or a vesicular tubercle, than can either of the latter form a blood-corpuscle. These bodies are as distinct in their microscopical appearances as they are in the circumstances of their formation, or in the final purposes which they serve, or effects which they produce, in the animal economy.

The extreme states of primitive tubercle are granules and vesicles: the former are elemental of the tubercle; the latter are the perfection of its primitive stage. In so far we see a certain correspondence between the generation of tubercle and the production of normal tissue.

Tubercle commences with an aggregation of granules; their number may be few or many. These granules, like those which form colourless blood-corpuscles and pus-globules, have a tendency to develop themselves into a higher structure, and to form cells. From some imperfection, however, either in themselves alone, or aided by a morbid action in the parts wherein they are being deposited, they either remain stationary as granules, or proceed only to an imperfect cell, viz. the corpuscle or vesicle already described. In passing to this vesicular state, the granules, if their number were originally few, are appropriated and expended in the developing of the tubercle, which is consequently seen to possess neither central nor peripheral molecules. When the granules aggregate more numerously, some of them are elevated into a vesicle inclosing the remainder, which appear to aid in the further spontaneous actions of the tubercle, viz. those of maturation. Vesicular tubercles which contain no granules, maturate much more slowly than those which are nucleated.

Primitive tubercle, though incapable of any direct approach to organization, is not, strictly speaking, an inert body; it is semi-organized, and retains some portion of that low vitality with which it was impressed in its rise and progress from a few aggregated granules. In this consists its dangerous and destructive tendency. The elements of tubercle (granules) may remain in the lungs *ad infinitum*, and neither the patients suffer from them nor physical diagnosis be able to detect their presence; and frequently, indeed, the vesicular tubercles will continue stationary for years, and though obstructing respiration in the portion of lung containing them, may not excite in it any inflammatory action, nor themselves undergo any further change. Too often, however, these semi-organized bodies, with their low vitality, perpetuate the action to which they were indebted for their origin, and in consequence pass on to an alteration both of

* Op. cit. pp. 377-8.

structure and composition, and become *matured tubercles*, at which stage all vitality and all organic power leave them. This maturative action is, for the most part, performed by the constituents of the tubercle, *per se*, though it is in some measure, no doubt, dependent upon the connexion of the tubercle with a living body. It never takes place in the dead subject, nor if vesicular tubercle be removed from its site, can any artificial process induce in it the action which is essential to maturation. I have subjected this tubercle, both in its solid and fluid state, to every variety of spontaneous and chemical destruction, without having in any one instance observed an approach to that action, or to the result of it, which in the living body is the necessary forerunner of tubercular softening. Primitive tubercular matter, in its solid state, undergoes decomposition out of the body with singular tardiness. Often, indeed, it will scarcely decompose at all. I have specimens by me at this moment, which are perfectly sound and free from change, though they have been kept without any precaution for nearly five months. Even when *in situ*, it is not uncommon to see the pulmonary tissue of a dead subject sinking into putrescence around these tubercles, themselves being unaffected, or only commencing to decay. I have frequently seen the solid varieties of primitive tubercle floating unchanged in the liquid products of decomposition. And when vesicular tubercle *does* decompose, it undergoes no alteration of composition or of appearance beyond that which any simply albuminous matter suffers in the process of decay. But the action of tubercular maturation in the living body is a very different thing. From having been simply and entirely albuminous, the tubercle has become more compound in its nature. It now contains a notable, but a variable proportion of fat; occasionally gelatin, and its albumen, instead of being homogeneous-looking, has acquired an irregularly granular and massy appearance, and sometimes seems to have made an approach even to a fibrous structure. The action necessary to this change has no analogue in any process of decomposition with which we are acquainted. It is (within certain limits) to all intents and purposes an organic action. It is, perhaps, as low a form of organic action as any we are acquainted with, but is plainly an offspring of forces which are beyond those that are merely chemical and physical.*

"The process of tubercular softening, *properly so called*, is simply one of decomposition. It has nothing in common with the development and maturation of tubercle, but is consequent merely upon a chemical change of the elements of matured tubercle." (p. 477.) Upon the subject of the absorption of tubercular matter, Dr. Wright makes certain observations as the result of extensive and carefully conducted experiments. He says, "Tubercular matter, in small quantity, in the blood, is productive of no inconvenience or injury so long as it circulates freely; and if its discharge by any mucous membrane, not likely to give it lodgment, be certain, I think it probable that tubercle might be constantly passing through the circulation without occasioning injury. Tubercle before having commenced to decompose, is as harmless as laudable pus, or any other substance having a similar composition. The only manner in which it could prove detrimental in the blood-vessels, would be by accumulating in some situation, where, by not being subsequently thrown off, it would decompose, and so lead to the destruction of the contiguous tissue, or to the contamination of the whole system." (Op. cit. p. 525.) Concerning the chemistry of tubercle, Dr. Wright says, "Its composition is scarcely less variable than are

* Op. cit. pp. 418-9.

its physical appearances and properties. Like these it differs according to the age, the degree of maturation, and the locality, of tubercular matter. Chemists, as well as microscopists, have fallen into the error of taking a single specimen of tubercle in a particular state, ('crude') and from its analysis, of inferring the composition of tubercle in its entire acceptation. No error of inquiry or induction can be greater than this.

"Primitive tubercular matter in its fluid transparent state, is purely albuminous, and affords neither reactions nor analytical results at variance with those of any simple albuminous solution. It appears to be neutral to test-paper, but galvanism or incineration furnishes evidence of the presence of soda. Sulphur is also a constituent, but in still smaller proportion.

"Solid primitive tubercle, transparent or opake, usually answers to analysis like coagulated albumen. Often, however, owing to the length of time it may have been deposited, or the situation in which it may have been placed, it will be found to have acquired a greater or less proportion of earthy or saline matter, or both. The change appears to be effected by a process of endosmose and exosmose.

"Matured tubercle, also, according to the extent of its maturation, will vary in chemical composition. In proportion as it has advanced to maturity, will its fatty matter, or gelatin, or fibrin, or all of these, be abundant. The ratio of its earthy and saline constituents is also liable to much variation.

"In the progress of decomposition (softening) the constituents of tubercle are changed both in number and kind. The gelatin is usually the first to disappear; then the traces of fibrinous structure become indistinct, or are lost; the cells are obliterated; the fatty matter is discoloured and fetid; ammonia, or its hydrosulphate is disengaged, and the mass sinks into liquidity and rottenness."

Dr. Wright says, that tubercle is apt to derive some physical or chemical peculiarity according to its site, as, for instance, in the liver, brain. mesentery, kidney, and near the rectum. (Op. cit. p. 526.) He found the composition of matured (cheesy) tubercle to vary considerably. The two following analyses he gives as the mean result of his investigations:

Fatty matter, with oil-globules .	15·9
Gelatin . . .	6·4
Phosphates, Sulphates, Muriates of Lime, Soda . .	11·2
Carbonate of lime, a trace.	
Oxide of iron, a trace.	
Albuminous matter with fibrin .	65·2
	98·7

Fatty matter with oil-globules .	7·4
Gelatin	11·8
Phosphates, Sulphates, Muriates of Lime, Soda . .	2·5
Albuminous matter . .	76·9
	98·6

Many papers which were deserving of notice in this and the preceding Report have been passed by for want of room. From the zeal with which chemistry in its relations to medicine is being now cultivated this will often occur, and it has been suggested to the editor of this department, that an enumeration of the leading papers and works of which he has been unable to give a notice might prove of much use to those who are investigating special points of chemistry. Some of the following essays will be noticed in the next Report.

Periodical Literature.

1. On the tendency of matter to harmony. A Lecture delivered before the Society of Natural History in Utrecht. By G. J. Mulder. (An excellent translation, from the pen of Dr. White, physician to the Winchester Hospital, appeared in the February and March numbers of the 'Chemist.' There is a striking similarity between the doctrines of Mulder and the views of the anonymous author of the 'Vestiges of Creation.')
2. Experimental researches on the development of fat. By Boussingault. Annales de Chimie et de Physique, August 1845.
3. Experiments on the fattening of geese. By Persoz. Ibid.
4. On the composition of the wax of bees. By Dumas and Milne Edwards. Ibid.
5. On the formation of fat in the animal organism. By Liebig. Annalen der Chemie und Pharmacie, June, 1845.
6. On the composition of the yelk of the egg. By Gobley. Comptes Rendus, Nov. 1845.
7. Contributions to the theory of digestion. By Plattner. Müller's Archiv, No. 4, 1845.
8. On the theory of digestion. By Hoffman. Haeser's Archiv, vol. 6, No. 2.
9. On the occurrence and formation of sugar in the animal organism. By Budge. Roser und Wunderlich's Archiv.
10. Microscopical and chemical contributions to practical medicine. By Heinrich. Haeser's Archiv.
11. Experiments on the artificial production of inflammatory blood by means of medicines. By Schültz. Froriep's Notizen.
12. On the chemical analysis and nature of some of the constituents of the blood. By F. W. Griffith, M.D. Med. Gazette, May and June 1845.
13. On diseased secretions in general. By Frey. Roser und Wunderlich's Archiv.
14. On the quantitative analysis of the urea, potash, and ammonia, in urine, and on the composition of nitrate of urea. By Heintz. Pogg. Annalen, 1845. No. IX.
15. On the composition of oxalate and nitrate of urea. By Marchand. Journal für prakt. Chemie, Feb. 1845.
16. On the composition of nitrate of urea. By Fehling. Annalen der Chemie und Pharmacie, Aug. 1845.
17. On the pathological chemistry of the urine and blood. By G. Padley. Med. Gaz. June 6th.
18. On the analysis of the urine of insane patients. By Alex. Sutherland, M.D., and E. Rigby, M.D. Med. Gaz. June 6th.

19. On the importance of microscopical and chemical investigations in mental disease, especially in reference to the examination of the urine. By Heinrich. Haeser's Archiv.
20. On the frequent occurrence of alkaline urine in healthy men. By Krukenberg. Henle and Pfeufer's Zeitsch.
21. On certain salts of uric acid. By Bensch. Annalen der Chemie und Pharmacie, May 1845.
22. Researches on hippuric acid and its salts. By Schwartz. Annalen der Chemie und Pharmacie, April.
23. On uric oxide and its salts. By Unger. Bericht über die Verhandl. der Kongl. Preuss. Akad. zu Berlin. April 1845.
24. On the urine of the herbivora. By Von Bibra. Annalen der Chem. und Pharm. Jan. 1845.
25. On the urine of the herbivora. By Boussingault. Annales de Chim. Sept.

Works.

1. Animal Chemistry, with reference to the Physiology and Pathology of Man. By Dr. J. Franz Simon. Translated and edited by George E. Day, M.A. and L.M. Cantab., Licentiate of the Royal College of Physicians. In two volumes. Published by the Sydenham Society.
2. On the Analysis of the Blood and Urine in Health and Disease; and on the Treatment of Urinary Diseases. By G. Owen Rees, M.D. Second edition. (A good work as far as it goes, but not touching on many of the most important recent discoveries in animal chemistry. In fact, the author states in his preface, that he has avoided as much as possible entering into scientific details as foreign to the purpose of the work, which must be regarded as simply on proximate animal analysis. There are a few points in connexion with his methods of analysis that we shall notice in our next Report.)
3. Gregory's Outlines of Chemistry. London, 1845. (A most excellent manual.)
4. An Essay on the Pathological Physiology of the Blood. By Dr. Wunderlich, p. 261. Stuttgardt, 1845.
5. On the Analysis and Synthesis of Pseudoplastic Processes. By Dr. Zimmermann, pp. 355. Berlin, 1844.
6. The Chemistry of Vegetable and Animal Physiology. By Dr. G. J. Mulder. Translated from the Dutch, by Dr. P. F. H. Fromberg. Edinburgh, 1845. (This work is appearing in parts, two of which are now published.)
7. The Mutual Relations of Physiology and Chemistry,—a critique on Liebig's Animal Chemistry. By O. Kohlrausch. Göttingen.
8. Marchand's Manual of Physiological Chemistry. Berlin, 1844.
9. A Contribution to the Theory of Blood-Crases. By Fr. Xav. Mühlbauer. Erlangen, 1845.
10. On the Chemistry of the Bones and Teeth of Man and the Mammalia. By Von Bibra. Schweinfurt, 1845.
11. On the Comparative Physiology of the Invertebrata—a Physiologico-Chemical Essay. By Dr. C. Schmidt. Brunswick, 1845.

VI.

REPORT ON THE PROGRESS OF FORENSIC MEDICINE.*

BY WILLIAM AUGUSTUS GUY, M.B. CANTAB.

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§ I.—*Toxicology.*

1. *Poisoning by Hydrocyanic Acid.*—The subject of poisoning by hydrocyanic acid holds the same place, in point of importance, as it did in the former Report. No less than five cases have been recorded in the English journals during the last half of the year. Of four of these it is proposed to give a full account, adding such additional facts and observations as can be gleaned from the cases themselves, or from the commentaries which accompany them.

Two cases of poisoning by prussic acid, by Mr. Nunneley, of Leeds. Two interesting, instructive, and minutely detailed cases of poisoning by this acid, were communicated to the 'Provincial Medical and Surgical Journal,'† by Mr. Thomas Nunneley, of Leeds. The particulars of the first case are condensed from the evidence given before the inquest held upon the body; those of the second case, which terminated favorably, chiefly from the man's own account.

The leading particulars of the first case, as gleaned from Mr. Nunneley's communication, are as follows:—The deceased purchased of a druggist an ounce of prussic acid, labelled "Scheele's strength," but which was subsequently proved by careful analysis to contain only 1·5 per cent. Of this it would seem *probable*, that five drachms and a half were swallowed by the deceased, as the bottle when found on his person contained two and a half drachms. The circumstances under which the poison was swallowed are involved in some obscurity; but, from a comparison of all the facts detailed in evidence, or observed by Mr. Nunneley himself, it is most probable that the deceased poured the poison into a tumbler which he found on the

* It is but justice to Dr. Guy to state that in consequence of the late arrival of some of the Foreign Journals devoted to his subject, there must of necessity be some omissions in the present report. The great length to which some of the present reports have extended has also rendered it necessary to omit several abstracts from the English Journals of the last half-year. In the first report of the ensuing year, the omissions from the Foreign Journals will be supplied, and a report on the important subject of Public Health will be added to the volume.—Ed.

† July 23 and 30, Aug. 13, 1845.

table of a room on the ground floor, swallowed it, rinsed the glass out, threw the water used for this purpose into and about a spittoon, replaced the stopper in the bottle, and put the bottle into his pocket, ran up stairs with the tumbler to a room on the floor above, placed the tumbler on a table, and then threw himself on the sofa at the end most remote from the part of the table on which he had set the glass. About three minutes from the time that the deceased was heard to enter the lower room, he was found by one of the witnesses (Mr. Tennant) lying on his back on the sofa, but as soon as he heard him enter the room, "he sprang up, and sat upon-an-end." He did not speak, but appeared like a man who was suffering from an excess of drink. Mr. Tennant then left the room, and returned almost immediately, when he found the deceased sitting in the same position, with the exception that he was reclining on the right side, with his head on the sofa cushion. Mr. Tennant then said, "You seem ill, sir," when he made an attempt to speak, but was not intelligible. The witness then went close up to him, and said, "You must excuse me interfering with you, but you seem very ill," and then asked him if he could be of any assistance to him, if he might fetch a doctor. The deceased in reply laid his hand on his breast, and said, "Oh no, it is too late, it is too late!" These were the only words he uttered. Mr. Tennant then rang the bell for the landlady who attended the deceased, while Mr. Tennant ran for a medical man. In her evidence she stated, that she thought the deceased was in a fit, and accordingly loosed his handkerchief and collar, and bathed his head with brandy. In about five minutes from Mr. Tennant's leaving the room, and about a quarter of an hour from the time that the deceased was heard to enter the house, Mr. Nunneley arrived. He found the deceased still lying on the sofa, resting on his right side, unable to speak, and apparently unconscious, but the pulse was still beating slowly, but distinctly. On reaching the top of the stairs, near the door of the room, Mr. Nunneley thought he detected the smell of hydrocyanic acid; but on going to the end of the room where the deceased was, he could not detect it, in consequence of the strong odour of the brandy, which had been used to bathe the head of the deceased. Suspecting that the deceased had taken hydrocyanic acid, no time was lost in dashing cold water upon him, which "decidedly roused him." This remedy was repeated with effect several successive times; "it roused him, and he took a deep inspiration." Ammonia was also administered, and freely applied to his chest. A small quantity of a solution of chlorine was also given; and the feet and legs were placed in a hot mustard bath. The deceased was conscious of the administration of the ammonia. In spite of these remedies, however, "he gradually became stiller, and sank; his legs, arms, and chest were convulsed, slightly, the upper extremities more than the lower, and the jaw was fixed; the eyes were prominent and staring, and the pupils widely dilated; but before death they became much less so; they were glassy. The countenance was puffed up and dark, rather purple. There was some foam about the mouth; he breathed slowly and convulsively, something like violent sobbing." "The blood-vessels were injected, and the whole of the countenance bloated. The hands were partially contracted, the fingers rigid, and about the nails of a dark lead-colour." The time which elapsed between the arrival of Mr. Nunneley and the death of his patient amounted to about half an hour; it therefore follows, that he survived the taking of the poison three-quarters of an hour. The following is a short abstract of the post-mortem appearances presented by the body five hours and a half after death. *External appearances.*—Body still warm; upper parts pallid,

but all the depending portions livid; the cutaneous veins, especially those of the legs, filled with fluid blood; the limbs about as rigid as is usual at the same period after death; the fingers, at the root of the nails, discoloured; the countenance placid, but somewhat turgid; the eyelids closed; the eyes prominent and glassy; the pupils moderately dilated; the jaws contracted, and the lips closed. "There was the odour of hydrocyanic acid in the room near the body. The degree, however, in which this could be perceived by those present, on applying in succession the nose to the nostrils of the deceased, differed materially; by Dr. P. Smith very strongly; by myself decidedly, but not what I should call strongly; and by the other two gentlemen, scarcely, if at all; indeed, they could not say they did perceive it." Elsewhere Mr. Nunneley says, "It" (the odour) "was perceptible to my nostrils even before the body was opened. It was so strong that I had an effect from it for some hours afterwards; that is, constriction about the pharynx." *Abdomen.*—On opening the peritoneum, the odour of hydrocyanic acid was instantly perceptible in any part of the room; but most distinctly, close to the stomach. All the viscera healthy. No odour of the acid in the intestines; but a sour smell, with an exceedingly strong odour of the acid in the contents of the stomach. The stomach contained rather more than a pint of half-digested matter (he had eaten a hearty breakfast about two hours and a half before taking the acid), and its mucous membrane exhibited the turgescence of the vessels usual during the process of digestion. *Chest.*—Lungs healthy; large bronchial tubes filled with reddish frothy serum. Heart healthy, but completely distended on both sides with dark fluid blood. *Head.*—Chronic inflammation of the arachnoid; serous effusion on the surface and into the ventricles; substance of the brain firm, perhaps rather more so than usual. The *chemical analysis* was performed by Mr. West. The substances submitted to analysis were the contents of the stomach, the matters contained in about fifteen inches of the ileum, two ounces of blood from each side of the heart, and three drachms of serum from the brain. *Contents of the stomach.*—Strong acid reaction; marked odour of prussic acid; decided reaction with the silver and iron tests; four tenths of a grain of pure hydrocyanic acid, equal to 27 grains of medicinal acid of 1·5 per cent. (the strength of the acid in the bottle), were obtained from the contents. From experiments on the contents of the ileum, the blood, and the serum of the brain, Mr. West states that he thought himself "warranted in stating, the arterial blood, and the fluid from the brain, as well as the contents of the ileum, to contain a distinct, though very slight trace of hydrocyanic acid; the venous blood none." This fact is inferred from the production of a film upon a drop of nitrate of silver inverted over the substances in question. The products of the distillation of the contents of the ileum precipitated nitrate of silver, but did not yield Prussian blue; the liquid distilled from the arterial blood and serum, neither affected the silver test, nor yielded Prussian blue. It is obvious, therefore, that the presence of hydrocyanic acid in these fluids must be considered to the full as doubtful as the passage just quoted would make it. The parties present thought that they perceived the odour of prussic acid in the serum from the ventricles of the brain; "Mr. Nunneley with some hesitation, but still he thought he could perceive it; Dr. P. Smith perceived it so decidedly as to have no hesitation about it."

Such is a careful abstract of this extremely interesting case. Some observations communicated by Mr. Nunneley to the succeeding number of the same journal, will be noticed in their proper place.

The second case of poisoning by this acid reported by Mr. Thomas Nunneley will be found in the 'Provincial Medical and Surgical Journal.'* When Mr. Nunneley saw the patient the symptoms had passed away, but "he was able to give a detailed and perfectly natural account of the whole transaction, and of his feelings at the time of becoming insensible. This he repeated the next day, and the different parts of it were so confirmed by different persons, that there cannot be any doubt of its accuracy." The patient, a book-keeper in a large manufacturing establishment, 40 years of age, bought threepenny worth of prussic acid under the pretence of poisoning animals, and on going to bed at night undressed himself by the bedside, nearly filled a wine-glass with gin, emptied the bottle containing the hydrocyanic acid into the glass, corked the bottle, and placed it on the chimney-piece, drank off the contents of the glass, which he set down, then threw down the bed-clothes, got into bed, and covered himself up. He now said to his wife, "Well, Bessy, I have taken something, and it will be all over with me in a few minutes." She immediately jumped out of bed, and ran screaming to the door. When she left the bed, the child, who was frightened, crept to its father, and said to him, as he informed Mr. Nunneley, "Father, don't leave me;" to which he replied, putting his arms round it, "No, my dear, I wont leave you." He now perceived his jaws becoming stiff, and crammed the sheet between his teeth, thinking, as he said, that he should like something to hold by: he felt his jaws becoming stiffer and tighter, which was all he was conscious of until the water was dashed in his face, when he raised himself, and to his surprise, found several persons round the bed. He had no idea how long he had been unconscious, and said that he felt no pain till the water was dashed upon his face; the sensation he then felt, he said, was most awful, he could not describe it. About two minutes from the time the poison was taken the wife returned, and found her husband lying upon his back, insensible, breathing hard, the eyes wide open and staring, the face "black red." In about ten minutes from the swallowing of the poison Mr. Bishop reached the house, and found the man foaming at the mouth, the face rather pale, and covered with large drops of sweat, the arms rigid, the hands half extended, the jaws so firmly closely as to prevent him from giving an emetic of sulphate of zinc. Mr. Bishop immediately dashed cold water over the head and neck, when the man raised himself up, and became sensible; ammonia was then rubbed over the hands, the smell of which he quickly perceived, and said he felt better for it, and the sulphate of zinc was administered; vomiting soon followed, the matter ejected smelling strongly of hydrocyanic acid. About a pint of blood was next taken from the arm, which had a muddy-red brick tint, and coagulated as usual. There was a difference of opinion as to the blood having an odour of prussic acid, but the poison could not be detected in it by chemical tests. The strength of the acid was found to be three and a quarter per cent. of real acid. The quantity of acid taken was estimated at forty drops, so that the man must have taken nearly one grain and a half of anhydrous prussic acid. Twenty minims of the same preparation destroyed a small half-grown mongrel dog in two minutes and a half, and a full-sized terrier bitch in one minute.

A report of the same case by Mr. Edward Bishop, surgeon of Kirkstall, agreeing in all essential particulars with the foregoing will be found in the 'Lancet.'†

* Aug. 13, 1845. † Sept. 20, 1845.

Two cases of poisoning by hydrocyanic acid, by Mr. Hicks, of Newington.—Mr. James Hicks, of Newington, has made an important addition to our knowledge of the effects of prussic acid, by the publication of two cases, accompanied by some judicious comments, in the pages of the 'Medical Gazette.'* The first case is an abridgment of one published in a former number of the Gazette; the second is related, for the first time, from memory. The following are the leading particulars of the first case. A female, about 22 years of age, swallowed a draught containing, as ascertained by analysis, *nine tenths* of a grain of pure anhydrous acid. It appears, from the statement of the father, who was present when the medicine was taken, that, on swallowing it, the girl started up, threw her hands over her head, drew a deep gasping breath, stood for a second, and then, running forward for a short distance with great violence, fell with her head first to the ground, after which she never moved, but continued to make a moaning noise for five minutes afterwards. On Mr. Hicks's arrival he found the girl lying on her back, perfectly insensible, with her teeth clenched, foam issuing from the mouth, and the face so greatly congested as to be almost purple; the breathing was slow, laborious, and at long intervals; the pulse imperceptible, and the action of the heart indistinct; the eyelids were partly closed, the eyes appearing as if pushed forward between them, the pupils fully dilated, and insensible to light; the body was so strongly convulsed that the head seemed buried between the shoulders, and the arms were nearly turned round by the action of the pronator muscles. Mr. Hicks's first impression was that the patient was labouring under some form of epilepsy; but having ascertained that the symptoms came on immediately after taking a dose of medicine, he was soon convinced, by the taste and smell of the liquid, that she had taken prussic acid. Ammonia was accordingly applied to the nostrils, the cold affusion to the head, and a fruitless attempt was made to administer some brandy and ammonia. In spite of this treatment "the breathing became gradually slower, and at longer intervals, until it entirely ceased, death appearing to have been caused, in this instance, by the perfect inability of the patient to get air into the lungs by inspiration; the time that elapsed between taking the poison and death being twenty minutes." The body was examined ninety hours after death, and presented the following appearances. Externally it had much the appearance of a person who had died by asphyxia; the teeth were clenched, the mouth covered with foam, the face of a dusky red hue, and the whole of the depending parts of the body of a dark purple or violet colour. The internal appearances were as follows. *Head.*—The dura mater and sinuses much congested, the whole substance of the brain dotted with fluid black blood, the ventricles empty, and the plexus choroides pale and bloodless. No odour of prussic acid perceptible. *Chest.*—Odour of prussic acid distinctly perceptible, far more so than in any other part of the body; lungs healthy, but much congested; the right ventricle of the heart loaded with blood; the aorta empty; the blood fluid and very black. *Abdomen.*—Stomach containing about four ounces of fluid, smelling strongly of prussic acid; its lining membrane, with the exception of a small red patch on the posterior part, near the cardiac orifice, healthy; the kidneys much congested, and of a dark pinkish hue; the rest of the viscera healthy. The contents of the stomach were examined five days after death. The odour of prussic acid was still perceptible, and the poison was detected by the iron and silver test. It was ascertained that the quantity of the poison taken did not exceed *nine tenths* of a grain of pure anhydrous acid, a quan-

* New Series, Nos. 11, 14, and 15.

tity equivalent to 18 grs. of Scheele's acid, or 45 of the pharmacopœial acid, the former of which contains five per cent. and the latter two per cent.

A report of this case, differing little from that published in the 'Medical Gazette,' was communicated by Mr. Hicks to the 'Lancet,'* and is followed by a short account of the same case, drawn up by Mr. Watson and communicated by Dr. Letheby. The only discrepancies which it is necessary to point out are the following:—1. The prussic-acid lotion, which was taken by mistake, contained, according to Mr. Hicks, three grains and a half of anhydrous acid; but, according to Dr. Letheby's analysis, four grains. The fourth part, therefore, would contain, according to the first estimate, rather less than nine tenths of a grain; and, according to the second, one grain. 2. Mr. Hicks states that death took place in twenty minutes; Dr. Letheby, on the authority of Mr. Watson, "just fifteen minutes from the time of her taking the medicine." 3. In addition to the statement that the odour of the prussic acid was distinctly perceptible in the chest, we are told that "this was still more marked in the fluid contained in the pericardium." 4. The chief discrepancy, however, is to be found in the description of the stomach and its contents. Dr. Letheby says, "the stomach contained two ounces of a thick whitish fluid, apparently composed of biscuit and water. Neither of the three gentlemen whom I have named (Messrs. Watson, Waterworth, and Hicks,) could detect any odour of prussic acid; but it was evident to myself, even on the following day. On subjecting it, however, to a chemical analysis, I could but barely recognize the presence of this poison. The interior of the stomach presented those marks of ecchymosis which I have noticed and described in my three former cases." The following facts are necessary to complete the case. The deceased did not speak after taking the poison. She was not sick; nor were the fæces or urine expelled. The absence of shriek or scream has been already noticed.

Mr. Hicks's second case is as follows. "A girl having quarrelled with her lover, expressed a wish to leave the room, on account, as she stated, of feeling faint; but she had not done so more than a minute than she was observed to throw her hands over her head, and then fall to the ground; the breathing for a time was quite imperceptible, when, after making a few gasps for breath, she died five minutes after taking the poison, without having been in the least convulsed from the first. Within a short time after she died I arrived at the house; at this time the body was still warm, but, with the exception of a pallid state of the countenance, there was not an unnatural appearance to be seen about the corpse. It appears in this case that the girl took the poison as soon as she had left the room, and that she merely complained of feeling faint as an excuse for doing so. But the most interesting facts were, that, notwithstanding the dose was large, being an ounce of Scheele's, she had sufficient time to put the bottle into the front of her dress prior to volition being destroyed, while, at the same time, there were no convulsions, neither was there any scream, the girl falling down without making any noise whatever."

Case of poisoning by prussic acid, by Dr. Guy.†—This case, of which the leading particulars are stated on the opposite page, is interesting, first, by showing that a considerable interval of perfect consciousness, and complete command over the voluntary muscles, may intervene between the swallowing of a large dose of the acid and the development of its characteristic effects; and, secondly, as an instance of attempted suicide, in which the

* July 26, 1845. † Medical Times, November 22, 1845.

impulse to the commission of the act preceded the act itself by a very short interval of time.

There are some few facts of importance established by the foregoing cases which deserve to be briefly considered. This will be best done under distinct heads.

Symptoms.—*The shriek.*—The preceding cases give no confirmation to the importance attached to the shriek as a symptom of poisoning by prussic acid. In Mr. Nunneley's fatal case no shriek was heard, and it is highly improbable from the facts detailed in evidence that any could have been uttered. The shriek was also absent in Mr. Nunneley's second case, in both the cases reported by Mr. Hicks, and in Dr. Guy's case. It is very difficult, therefore, to understand whence the strong impression which has existed as to the importance of this symptom could have arisen. It is certainly not from observation in the human subject, unless indeed the exclamations uttered in one or two reported cases, or the loud gasping inspirations observed in other instances, have been confounded with a scream or shriek; so far from the shriek being a common symptom, Mr. Hicks says, "Although I have read over every case published in the different works on poisons and medical jurisprudence, I have not found a single instance where a shriek has been mentioned as occurring prior to death." In animals, moreover, the shriek, though of more frequent occurrence than in the human subject, is by no means a constant symptom. Even when, as in the case of Mrs. Belaney, a shriek is reported to have been uttered, it is by no means satisfactorily made out that the scream or shriek was a symptom of poisoning by prussic acid. It is fully as reasonable to suppose that in her case it was a simple expression of alarm on finding that she had swallowed some of "that hot drink," of the fatal properties of which she was probably not ignorant. In the case of Sarah Hart, the noise which alarmed her neighbour was not a shriek, but "a moan or stifled groan,"—probably the loud gasping inspiration which was so marked a symptom in Dr. Guy's case.

Acts of volition.—The foregoing cases form a very useful addition to our information on this subject. In Mr. Hicks's second case the girl threw her hands over her head, fell to the ground, and after a few gasping respirations died in five minutes. The only act of volition consisted in placing the bottle in the front part of her dress. His first case was marked by stronger muscular contractions but by no act of volition. The girl started up, threw her hands over her head, drew a deep gasping breath, stood for a second, and then, running forward for a short distance with great violence, fell with her head first to the ground, after which she never moved, but continued to make a murmuring noise for five minutes afterwards. She died at the end of twenty minutes. The other three cases were characterized by the performance of several acts of volition. After a dose of prussic acid which under less favorable circumstances would probably have proved rapidly fatal, the young lad, whose case is recorded by Dr. Guy, after swallowing the poison got out of bed, walked round the foot of the bed to a chest of drawers at some little distance from it, placed the stopper very firmly in the bottle, laid it on the drawers, walked back to bed, sat on the side of it, and then for the first time lost all consciousness. Mr. Nunneley's cases are still more remarkable, as the patients not only moved about, but spoke and answered questions after taking the one a fatal, the other a large, dose of prussic acid. The two cases are among the most remarkable and instructive yet recorded. For the several acts of volition performed the reader is referred to the cases themselves. The fact that both patients enjoyed the use of speech for some little time

after taking the poison is well worthy of remark. The subject of the first case answered a question addressed to him some minutes after he had swallowed the poison, and the man who recovered retained the use of his speech till the jaws gradually closed. If these facts had been known to the profession before the trial of Belaney, the medical witnesses would not have expressed themselves in such decided terms as to the improbability of voluntary motion or speech after the utterance of the shriek, especially if they had formed the very feasible opinion just expressed, that the shriek might not, after all, have been a symptom of the poisoning, but merely an expression of terror uttered during the interval of perfect consciousness and self-command which so often follows immediately on the swallowing of the poison.

Duration.—In Mr. Nunneley's first case, the duration, as far as it could be ascertained, was three quarters of an hour; in Mr. Hicks's first case fifteen or twenty minutes, in his second case five minutes.

Dose in fatal cases. Smallest fatal dose.—In Mr. Nunneley's fatal case, the quantity could not be ascertained. It is probable, however, that it amounted to four drachms and a half of acid containing one and a half per cent. of pure anhydrous acid. One ounce had been purchased, and the bottle when found contained two drachms and a half. At any rate, this case throws no light on the question of the smallest dose which may prove fatal. In Mr. Hicks's first case the fatal dose did not exceed *nine-tenths* of a grain of anhydrous acid, or, according to Dr. Letheby's analysis, a grain.

Quantity taken in cases of recovery.—In Mr. Nunneley's second case, the quantity of anhydrous acid taken was estimated by Mr. West at *one grain and a half.* In Dr. Guy's case, neither the quantity nor the strength of the preparation could be ascertained.

Treatment. *Cold affusion.*—" Of all the remedies I am acquainted with," says Mr. Nunneley, " I should be disposed to place most reliance upon cold affusion. In this instance (the fatal case) more effect was produced by the dashing of cold water than by any other means." By way of illustration of the value of this remedy, Mr. Nunneley gives the following. " Some years ago I well recollect taking a very large Newfoundland dog to the side of a pond, and giving him upwards of a drachm of hydrocyanic acid, originally of Scheele's strength, but having been kept some time, it had probably lost something of its strength, yet, I am convinced was sufficiently potent to destroy life. He almost immediately began to stagger, when two of us seized him by the leg, and threw him into the water, in which he swam about for a time, and presently came out, not much the worse for the dose."

Tests.—Mr. Nunneley, in citing Mr. West's analysis of the contents of the stomach in the fatal case reported by him, impugns the accuracy of the statement made in toxicological works, that the cyanide of silver is insoluble in cold, though soluble in boiling nitric acid. Dr. West says: " I applied the acid, cold, to the washed precipitate, and found it to dissolve without heat. I formed a fresh portion of cyanide from some Scheele's acid; this also dissolved in cold nitric acid. It appears, therefore, that the supposed insolubility is at most a matter of proportion, and should not be described as a characteristic of the cyanide." Mr. Nunneley corroborates this statement. " I have tried the effect of nitric acid upon cyanide of silver, made with hydrocyanic acid of different strengths, as well as nitrate of silver solutions of different strengths, and I am satisfied that it is, as stated, only a question of proportion. If the precipitate is not very copious, and occasioned by only weak solutions of the acid and salt, then cold nitric acid dissolves it, even if the acid be not of the strongest; but, on the contrary, if

the precipitated cyanide be abundant, in large flakes, and made from stronger solutions of the nitrate of silver and hydrocyanic acid, then concentrated boiling nitric acid is required for its solution." [This statement is correct, and as it affects the value of a very delicate test, on which much reliance is placed, it is not unimportant.]

Mr. Hicks has tested the relative delicacy of the iron and silver tests, and of the odour of the acid. When the tests were added to the solution of the acid the limit in the case of the iron test was 1 minim of prussic acid to ℥iv distilled water; in the case of the silver test, 1 minim to ℥xvj, with which quantity a milkiness was obtained. There was a faint odour when the proportion was 1 minim to ℥iv, and a doubtful result with ℥viij and ℥xvj. When watch-glasses moistened with caustic potash and a solution of nitrate of silver respectively, were held over the solution of hydrocyanic acid, sulphate of iron and muriatic acid being subsequently added to the liq. potassæ, the iron test gave "traces" of its characteristic action with 1 minim in ℥viij, and the silver test a film with as high a degree of dilution as 1 minim in ℥xxxij. It would, therefore, appear that the modification of the iron and silver tests proposed by Mr. Taylor, possesses, as might be anticipated, greater delicacy than the same tests added to a solution of the acid. Mr. Hicks has also instituted some experiments, with a view of determining the value of this modification of the iron and silver tests as applied immediately, and without previous distillation, to the human body or to the contents of the stomach. The following is a short summary of his experiments: 1. The stomach of a dog, which had been killed by three drachms of prussic acid, after being well washed and allowed to remain some time in water, was placed in a wide-mouthed bottle, over which a watch-glass, moistened with nitrate of silver, was placed. In ten minutes a white film of the cyanide of silver was deposited on the glass. 2. A cat was killed by 20 minims of Scheele's acid poured into the mouth. Eight hours after death, a small aperture was made in the parietes of the chest, and a watch-glass accurately fitted over it. In half an hour a white margin was formed, and, in an hour, the whole portion wetted with the nitrate of silver was covered with a distinct film of the cyanide, perfectly insoluble in cold nitric acid, but soluble in the acid when boiled. The iron test subsequently applied gave no indication of the presence of prussic acid. The whole contents of the chest, the stomach, and the lower part of the mouth, were then placed in a bottle, and, on the glasses being applied accurately, the presence of the acid was indicated by both tests. But, on submitting the same to distillation, it could not be detected in the distilled liquid, either by the odour, or by the iron and silver tests. 3. The third experiment consisted in pouring into the stomach of a man, who had recently died, half a pint of porter mixed with half a drachm of Scheele's acid, containing 4 per cent. or 1·12 grains of anhydrous acid. It was laid in a cool place, and examined two days after. The liquid, which had a *beery* smell, but no odour of prussic acid, was put into two bottles, over the mouths of which strips of glass moistened with liq. potassæ and solution of nitrate of silver, were placed. In less than ten minutes, most decided proofs were obtained of the presence of the acid, by the formation of white cyanide of silver in the one and Prussian blue in the other, on the subsequent addition of ferri sulphas and muriatic acid.*

Odour.—Mr. West, who performed the analysis of the contents of the stomach, and the other fluids taken from the body, in the fatal case recorded by Mr. Nunneley, says; "I have distilled a portion of the contents of the stomach, at this time, twenty-three days after the poison had been

* Med. Gaz. New Series, No. 15.

taken, and find the smell, the precipitate with nitrate of silver, and the Prussian blue precipitate. All these are produced, apparently, in the same degree as at first. This case is, therefore, opposed to the common notion of rapid decomposition of the acid."*

Mr. Hicks, in the course of his comments on the first case reported in the 'Medical Gazette' (New Series, No. 14), draws attention to the fact that the odour of the poison was more distinctly perceived on opening the chest than even in the abdomen, and he corroborates this statement by experiments on animals. "In many instances," he says, "where I have destroyed rats, the quantity has not exceeded four minims of Scheele's acid, still, on opening the chest immediately after death, as soon as all signs of life had disappeared, the odour has been distinctly recognized in that cavity, even when not at all presented in the stomach."

Experiments on Animals.—The following observations form part of Mr. Nunneley's commentary on the case reported by him in the 'Provincial Medical and Surgical Journal:' "Out of the great number of dogs, cats, and rabbits which I have destroyed by the acid, I believe the majority did not shriek. In some the effect is almost instantaneous,—a few violent struggles, followed by a rest; then a struggle and cry; an involuntary passing of the urine or fæces, and death,—the heart pulsating for some time after. All other appearances of life have gone, the creature scarcely having moved from the spot. At other times I have seen a dog run about staggering for a minute or more, making attempts to howl, but without succeeding. On the whole, I cannot but think that the instantaneous effects of hydrocyanic acid have been exaggerated, and that the quantity necessary to procure death has been somewhat under estimated. But different animals will be very differently affected. Thus birds die almost instantaneously. It is sufficient to put the beak of a small bird (a sparrow) into the mouth of a bottle containing only a very small portion of the acid, and the vapour will, in a few seconds quietly, as though paralysed without convulsions, destroy it. Mice are very susceptible of its action; rabbits are much more so than either dogs or cats. On the other hand, cold-blooded animals are almost proof against its influence. I have given it to frogs without producing much effect."

Mr. Hicks states, *inter alia*, that in experiments on dogs and cats he has never known a longer period than forty seconds to elapse before the effects of the poison become visible; and that he has not met with a single instance of death taking place without being preceded by convulsions. He also confirms the statement made by Mr. Blake, that the effects of the acid are not so prompt when it is introduced directly into the stomach, as when its vapour has access to the lungs.

Some useful comments on recent cases of poisoning by prussic acid, on the tests for the poison, and on the treatment, will be found in the 'Monthly Journal of Medical Science.'† Much stress is there laid on the value of bleeding from the jugular vein, as a remedial agent, and the practice is enforced by a long quotation from Dr. Lonsdale's treatise.

2. *Poisoning by bitter almonds.*—Dr. Letheby reports the followiug case, which is given with slight abbreviations. A boy, 13 years of age, was left in charge of his father's shop. He was seen well and cheerful at half-past three o'clock in the afternoon, but a little before four, the sister, a child ten years old, found him lying on the floor. She imme-

* Prov. Med. and Surg. Journ. July 30, 1845.
† No. lvii. Sept. 1845.

diately called the father, who found him stretched along the floor upon his back, perfectly motionless and insensible; his face deadly pale; his eyes open and rolling from side to side, and panting for breath. His father raised him into the sitting posture, and then noticed that his limbs, though quite supple, were powerless. In five minutes he was seen by Mr. Henry, a surgeon, who found him still insensible, his countenance placid, but very pale, his eyes half open, fixed, and the pupils dilated, and the lid did not move when the eye was touched. He was breathing slowly, deeply, and at intervals of a minute or so. The pulse at the wrist was gone, though the heart was still beating feebly. Cold water was dashed over the head and face, and an ineffectual attempt was made to administer stimuli by the mouth. About four or five minutes after his arrival the child died, and it is presumed that this must have been about a quarter of an hour from the time of his swallowing the poison. *Post-mortem* examination twenty-four hours after death. Face, placid but pale; eyes, half open; foam at the mouth, having the odour of bitter almonds. The depending parts of the body livid; the lungs congested; the right side of the heart gorged with dark fluid blood; the odour of the poison perceptible in the abdomen, but not elsewhere. The stomach contained twelve ounces and a half of a pulpy, semifluid matter, in process of digestion, and having a strong odour of bitter almonds. The internal coat of the stomach, with the exception of some red petechial patches along the greater curvature, was pale. On distilling the contents, with nitrate of silver, one grain of cyanide of silver was obtained, indicating about two-tenths of a grain of pure hydrocyanic acid. On further distillation the volatile oil of the bitter almonds was obtained, free from prussic acid. The points of medical interest in the case were the absence of convulsions; the fact that the boy did not speak after he was seen, that there was no scream, and no evacuation of the stomach, bladder, or rectum. He appeared to die from a paralysis of the respiratory muscles, the breathing becoming slower and slower.

Dr. Letheby adds the following summary of the symptoms of poisoning by this agent. "Those symptoms which appear to be most constant in the cases of poisoning by bitter almonds or cherry laurel, are a cadaverous or mortal paleness of the face and body, together with great coolness of the extremities; an almost imperceptible pulse, a slow or panting respiration, and, in the generality of cases, there are no convulsions, but a paralysis, first of the voluntary muscles, and then of the involuntary; after this a profound coma supervenes, and then death. Upon a post-mortem examination, we find nearly the same appearances which hydrocyanic acid produces. The face and highest parts of the body are generally pale, the dependent livid, the countenance is generally placid, the eye half open, glassy, and prominent, the pupil dilated; foam may be adherent to the mouth, and it will smell of the poison; the lungs are greatly congested; the right side of the heart and the venæ cavæ gorged with black, uncoagulated blood; the cavities generally have a strong odour of the bitter almond. The stomach may or may not be empty; its contents will always, if recently opened, give out a powerful smell of the oil; the inner coat is generally pale, excepting in one or two places, where there will be a blush of red, (I have seen this in three cases of poisoning by oil of bitter almonds,) and, altogether, there will be less doubt of the action of the poison than in a case of poisoning by prussic acid, for a greater evidence will be furnished by the odour, which is sure to be present in the stomach.*

* Lancet, July 12, 1845.

3. *Poisoning by acetate of morphia.*—An apothecary's assistant, 24 years of age, swallowed, at noon, fifty-five grains of acetate of morphia, in two ounces of gum water. He then forwarded a letter to his master, informing him of what he had done. The master arrived in half an hour, and gave him, with some difficulty and without effect, two grains of tartar emetic in an ounce of water followed by two tablespoonfuls of olive oil. Up to this time the only symptom present was slight giddiness, which soon disappeared, and the lad went for a walk with one of his companions, entered a café, and drank half a bottle of beer. At the end of an hour and a half the lad complained of slight giddiness, a sensation of weight in the limbs, and a slight tendency to sleep. After two hours he was taken to the hospital, put to bed, and made to swallow three grains of tartar emetic, and twenty-four grains of ipecacuanha, in two doses, at an interval of half an hour. Though the operation of the emetics was assisted by tickling the throat, vomiting did not occur, and an œsophagus tube was introduced without effect. At the end of two hours and a half the face, which was previously pale, assumed a violet hue; the eyes were injected, and turned upwards and outwards; a viscid perspiration broke out on the skin; the hands and legs grew cold and livid; the lad answered questions only by monosyllables; fell by degrees into a profound sleep; the head fell forward on the chest; the eyelids closed; and the body, when left to itself, fell on the side; the legs bent under him;—in a word, he was in the condition of a drunken man. The breathing in the meantime was natural. A pound of blood being taken from the arm, the patient rallied slightly, and complained of not being able to swallow. The pulse, which up to this time was soft and somewhat frequent, became full, hard, and slow, and there was a troublesome itching of the forehead, nose, and lips. This symptom, which began at the end of an hour, was at its height in two hours, and after four hours existed only at long intervals. The treatment now consisted of ammoniacal frictions to the belly and extremities, moxas to the legs, and repeated shaking of the body; but all in vain. The face was distorted; the eyes dull and sunken, and drawn upwards and outwards; and the entire surface of the body was icy cold. At the end of three hours a drachm of tincture of iodine and the same quantity of hydriodate of potash, in three ounces of water, was given in two doses, at an interval of a quarter of an hour. Immediately after the second dose the patient rejected what he had taken, but he slept while he was vomiting. Strong coffee was then given every five minutes, which was followed each time by vomiting. *Four hours.* The coma is still more strongly marked, and the patient can only be kept roused by pinching, tickling, and shaking him strongly. He can be made to speak, but will leave a word half uttered. He was again bled to the same extent as before, with the effect of lessening the coma. *Four hours and a half.* Face violet; the members contracted and stiffened; he is speechless, and cannot be made to open his eyes. Friction of caustic ammonia to the epigastrium, and a blister to each limb. At the end of *five hours* a third bleeding was performed; strong coffee was still administered, and two blisters were applied to the shoulders. *Five hours and a half.* From this time the patient began to improve; opened his eyes, though with great difficulty; regained the use of his speech, and endeavoured to explain his state to the bystanders. At the end of six hours he recognized the reporter, asked him how he did, inquired whether he did not think him very ill, and expressed surprise that he had survived fifty-five grains of acetate of morphia. At the end of *seven hours* the symptoms were slowly improving; he could struggle successfully against

his tendeney to sleep; his ideas were clear; and he could see, as he said, all that was passing, as if through a cloud. At eight o'cloek the next morning, sixteen hours after taking the poison, the report was that he had vomited repeatedly during the night, and still continued to do so. On his forehead there was seen a vesicular eruption, which accounted for the itching of the previous day. He still eomplained of heavincss of the head and eonfusion of intellect. On the following day he was nearly well, and left the hospital on the morrow. He still continued to complain of eructations, having the intense bitter taste of the morphia.* M. Bonjean regrets that he did not administer a solution of tannin, according to the suggestion of Orfila; and he adduees an experiment to show that the acetate of morphia is completely decomposed by that agent.

4. *Poisoning by poppy heads.*—The 'Gazette des Hôpitaux' (April 15, 1845,) quotes from the 'Echo dc la Frontière,' published at Valenciennes, the following eases. Three children of one of the faubourgs of Cambrai sucked some unripe poppy heads, and soon after, on going home, fell asleep. In the middle of the night the mother was roused from sleep by the unusual sound of their respiration, which consisted of a short laborious râle. At the same time the eyes were found wide open, the countenance pale and haggard, and the body convulsed. A medical man was immediately sent for, who succeeded in saving two of the children. Fruitless efforts were made to introduce an emetic into the stomach of the youngest, deglutition was arrested, the infant foamed at the mouth, and expired four hours after.

5. *Poisoning by hemlock*, (conium maculatum).—The children of one Duncan Gow, a tailor, of Edinburgh, found what they took for parsley, growing under Sir Walter Scott's monument, and took it home to their father, who, having fasted the whole day, greedily ate the vegetables, with a piece of bread. The quantity consumed could not be ascertained, but it probably amounted to several ounces. The history of this case, from the time of the fatal meal, is carefully compiled from the evidence of the several parties who subsequently saw Duncan Gow. The first effect was loss of power in the inferior extremities unattended by pain. This showed itself soon after the meal. "His gait, which at that time was faltering, afterwards became vacillating, he staggered as one drunk; at length, his limbs refused to support him, and he fell. On being raised, his legs dragged after him; and, lastly, when the arms were lifted, they fell like inert masses, and remained immoveable. Perfect paralysis of the inferior extremities was ascertained to exist one hour and a half after the poison was taken, and that of the arms half an hour later." The complete paralysis of the legs was accompanied by amaurosis; the excito-motory functions were also inferred to be paralysed by the fact that tickling the armpits failed to produce any movement of the upper extremities. He lost the power of deglutition, and made ineffectual efforts to vomit. "There were no convulsions, only slight occasional movements of the left leg; and, lastly, both inferior extremities were slowly drawn upwards when placed over the iron of the stretcher. Three hours after taking the poison, the respiratory movements had ceased; the pupils were fixed. At this time the heart's action was very feeble, and ceased altogether ten minutes afterwards. The intelligence remained perfect nearly to the last; two hours after taking the poison he still retained the use of his speech, and a quarter of an hour after that still appeared sensible, though he could

* Annales d'Hygiène, Jan. 1845. Reporter M. J. Bonjean, de Chambéry.

not articulate. The post-mortem appearances were, an unusual quantity of fluid blood in the vessels of the scalp, and in the sinuses of the brain, slight serous effusion beneath the arachnoid membrane, and into the ventricles, and numerous bloody points in the substance of the brain. The lungs were "throughout intensely engorged with dark red fluid blood. There were a few small clots of blood in the heart. The blood throughout the body was of a dark colour and fluid, even in the heart and large vessels. The stomach contained a pultaceous mass formed of some raw green vegetable resembling parsley. Its contents weighed eleven ounces, and had an acid and slightly spirituous odour. The mucous coat was much congested, especially at its cardiac extremity. Here there were numerous extravasations of dark red blood, below the epithelium, over a space about the size of the hand." The intestines and other viscera were healthy, but partially congested. On examining the contents of the stomach more minutely, it was found to consist chiefly of fragments of green leaves and leaf-stalks, and on a specimen being submitted to Dr. Christison, he recognized the *laciniæ* of the *conium maculatum*, or common hemlock. On bruising some of the leaves in a mortar, with a solution of potash, the peculiar mousy odour of conia was at once evident. The conium maculatum was also found growing on the spot from which the leaves had been gathered. Dr. John Hughes Bennet, the reporter of this case, accompanies it by some judicious comments, and shows the striking analogy of the symptoms to those recorded as having followed the drinking of the Κωνειον by Socrates; and justly observes that that analogy is strongly in favour of the opinion of the identity of the poison swallowed by Socrates and the conium maculatum.*

6. *Poisoning by arsenic.*—The trial of James M'Kerlie, before the Circuit Court of Justiciary, at Glasgow, in April 1845, as reported in the 'London and Edinburgh Monthly Journal' for June 1845, comprises some points worthy of notice. Three persons, a father, his son, and a shopman, partook of the same dish (kail), and some was also given to a dog. They were all affected more or less severely, but after frequent vomiting recovered. The occurrence of vomiting in the dog first excited suspicion as to the cause of the illness being in the food. Dr. Paton, who was first called in, stated that he tasted the broth, *and that it had an acrid pungent taste, and a powerful effect upon the teeth*, from which he concluded that there was arsenic in it. This statement, so much at variance with the experiments of Dr. Christison, deserves to be put on record, though it must be admitted to be quite possible that the acrid pungent taste might be due to some other substance contained in the broth, and used as seasoning. Arsenic was found in the broth by all the approved tests, and the results communicated in an excellently worded report drawn up by Drs. Penny and King, of the Andersonian University. James M'Kerlie was proved to have purchased arsenic, under the usual pretence of poisoning rats, and to have been in the kitchen during the cooking of the broth. These, with other suspicious circumstances, induced the jury to find a verdict of guilty, and the prisoner was sentenced to transportation for life.

An interesting and instructive case of triple poisoning by arsenic is recorded by Dr. Bayard.† The author's principal object in publishing these cases was to show the care which ought to be taken in medico-legal researches, and the little attention which ought to be paid to mere popu-

* Edin. Med. and Surg. Journal, July 1, 1845, p. 169. † Annales d'Hygiène, Janvier 1845, p. 858.

lar rumours. All the circumstances of the case, and the opinion of the medical men, who saw the deceased during life, were strongly opposed to the idea of poisoning, and it was not till the fifth member of the same family died in the short space of two years that any suspicions of foul play were expressed. The bodies were then ordered to be examined, when, in three out of five, arsenic was discovered.

The following case is reported by Dr. Parker of Maldon.—A fine healthy child, twenty months old, eat by mistake a quantity of a paste, consisting of honey, flour, and arsenic, kept for the purpose of destroying mice. The child was seen to swallow the poison by the mother, who instantly forced a considerable quantity of it from the mouth with her finger, and administered a dose of ipecacuanha wine, which operated freely. Dr. Parker was called a few minutes after, who encouraged the vomiting by copious draughts of milk. This was at 4 p.m. At 6 p.m. the report was as follows: the child has vomited much; has had two natural motions without pain; is now sleeping calmly; countenance entirely natural; pulse 130; respiration a little hurried. His mother states that this is his ordinary hour for repose, and that he is sleeping in his usual manner. 8 p.m. the same; half-past 9 p.m. still sleeping, but restless; skin hot; pulse 140; no expression of pain. Soon after 10 o'clock he got worse; the extremities and face became cold; lips livid; eyes sunk; the pupils fixed and rather dilated; pulse scarcely perceptible; respiration feeble, accompanied with sighing. After lying about half an hour in this condition, he expired without a struggle at half-past 11, nearly 8 hours subsequently to the accident. The body was examined 12 hours after death, when "the stomach and intestines exhibited little deviation from the healthy appearance. The former viscus contained a small quantity of mucus, and a few particles of paste. The villous surface manifested no signs of inflammation. Two or three vascular patches were detected, so faint, indeed, that they would probably have escaped notice, had not the interior of the stomach been an object of special investigation. There was no opportunity of examining the other viscera." The circumstances of the little patient sleeping naturally two hours after taking a deadly poison, and continuing asleep for more than three hours and a half, exhibiting no symptom of poisoning by arsenic more characteristic than a pulse of 140, and a slight degree of fever; and of its dying with symptoms of collapse in less than 8 hours from taking the poison, are well worthy of note, and make up together one of the most striking examples of a very peculiar class of cases.*

7. *Poisoning by mercury. Protochloride of tin as an antidote for corrosive sublimate.*—M. Poumet, of Orleans,† has examined the value of protochloride of tin as an antidote for corrosive sublimate, by means of a series of well-conducted experiments, and he arrives at the following conclusions: —1. Dogs which are made to take a solution of corrosive sublimate containing $15\frac{1}{2}$ grains, $7\frac{3}{4}$ grains, or $1\frac{1}{2}$ grains of the poison, die, even though allowed to vomit freely. 2. Dogs which are made to take 31 grains of the protochloride of tin in solution recover readily and promptly even when they are prevented from vomiting. 3. The black precipitate, and the supernatant liquid, the results of the mixture of the salt of tin with a solution of corrosive sublimate, are not poisonous. 4. A solution of

* Provincial Med. and Surg. Journal, July 16, 1845. † Recherches et experimentations sur le proto-chlorure d'étain considéré comme anti-poison de deutochlorure de mércure, par J. G. Poumet (d'Orleans). Annales d'Hygiène, Juillet et Octobre 1845, pp. 181 and 408.

the salt of tin, of twice the strength of the solution of corrosive sublimate, when introduced into the stomach, directly after swallowing the poison, neutralizes, instantly and completely, the deleterious property of the salt of mercury, even when the animal is prevented from vomiting. 5. This favorable result takes place, in one fourth of the cases, when the antidote, instead of being administered immediately, is given a quarter of an hour after the poison. 6. The protochloride of tin, then, is an antidote to corrosive sublimate. 7. Would it not be exactly the same with the sulphate and nitrate of mercury? M. Poumet states, that he has reason to answer this question in the affirmative.

[In the case of the corrosive poisons, the best antidotes are those which can be most promptly obtained, and as it is much more probable that white of eggs would be at hand in a case of poisoning by corrosive sublimate, than a comparatively rarer agent, the protochloride of tin, it is not likely that this latter substance, though doubtless an antidote to corrosive sublimate, will ever come into use.]

8. *Poisoning by corrosive sublimate externally applied.*—John Welch, a druggist, was tried at Worcester, June 18, before Lord Denman, for causing the deaths of two children by a lotion containing corrosive sublimate applied externally for the cure of ringworm. The lotion was applied to the heads of three children. It caused pain, followed by violent inflammation, vesication of the forehead, uneasiness and fever, pain in the head and bowels, and sickness. These symptoms were followed in one of the fatal cases by profuse salivation, ending in sloughing of the gums and tongue. The jury returned a verdict of not guilty, and thus held out an encouragement, scarcely required, to unlicensed persons to exercise an art which no previous training has prepared them to understand. No evidence was given as to the death of the other child.* The nature of the poison was strongly inferred, but was not proved by analysis.

A case of poisoning by corrosive sublimate, mixed by mistake with sulphate of potass (Sel Duobus), is related by M. Jean-Baptiste Chevallier. The poisonous mixture was administered by a quack midwife, who was tried before the Tribunal de Première Instance de la Seine, for the illegal exercise of pharmacy and the profession of medicine, and involuntary homicide by imprudence. The nature of the mixture was ascertained by chemical analysis.†

9. *Poisoning by copper.*—The existence of a copper-colic in men who work with that metal is a subject upon which some doubt has been expressed, its symptoms being attributed to the lead with which it is combined. M. Blondet, in a memoir read before the Academy of Sciences, asserts the reality of the poisonous effects attributed to copper, and describes the colic which it occasions as being subject to remission, characterized by severe pain, increased by pressure, and accompanied by headache, nausea, and diarrhœa, or constipation. The vomited matters are bilious, and the first alvine evacuations are often of a green colour. Fever is a somewhat rare accompaniment. In men who are not cleanly, the hair is green; the perspiration of the same colour; and the teeth are covered by a gray coating of sulphuret of copper. The prophylactic measures proposed by M. Blondet are the habitual employment of an albuminous drink, and saline purgatives when the bowels are costive. Cleanliness, though not mentioned, is an obvious item of the prophylaxis.‡

* Month. Journal of Med. Science, Sept. 1845: also Med. Gaz. Aug. 1, 1845, p. 608.
† Annales d'Hygiène, Janvier 1845. ‡ Gaz. Méd. de Paris, Fevrier 22, 1845.

10. *Poisoning by zinc.*—M. Blondet, in a memoir presented to the French Academy of Science, directs attention to the symptoms brought on by the fumes arising from zinc used in bronze and brass founding. Heavy pain in the stomach, nausea, loss of appetite, cough, oppression, fixed pain in the head and a sense of tightness across the temples, noise in the ears, which continues during the night, general debility, tetanic stiffness and soreness of the limbs, rigors, trembling of some hours' continuance, nightmare, a sensation of swelling, cold sweats preceded by flushes of heat. These symptoms disappear on awaking from sleep, but lassitude and soreness still continue.*

11. *Poisoning by sulphuric acid.*—A case of poisoning by sulphuric acid is reported by MM. Chevallier and Ollivier, which is chiefly interesting from the circumstance of the nature of the poison having been ascertained by an analysis of the clothes, after an examination of some of the vomited matters and of the contents of the stomach had failed—a failure attributed to the free discharge of the poison by vomiting. The post-mortem appearances were very characteristic, and such as to render unnecessary the application of the tests for prussic acid, arsenic, and corrosive sublimate, which the reporters thought it necessary to use.†

12. *Poisoning by savin.*—An extremely interesting and instructive case of poisoning by this substance, administered to a pregnant female, with a fatal effect both to mother and child occurred in the month of May last, and was the subject of examination in the coroner's court before Mr. Wakley. The poison was identified by the aid of the microscope, the green substance found in the stomach being compared with a portion of powdered savin. Mr. C. Johnson, lecturer on botany at Guy's hospital, stated that on examining a portion of the powder under the microscope, he was enabled to determine it to be part of the leaf of a plant of the pine genus, by the peculiar arrangement of the glandular apparatus of the leaf, and further, that it was savin by the exact correspondence of the glandular apparatus in question with that of a portion of savin powder examined at the same time. There was the same correspondence between the shape of the extremity of the leaf of the substance found in the stomach and a fragment of savin. The shape of the leaf was widely different from that of the yew (Taxus baccata), a poisonous plant belonging to the order coniferæ. The contents of the stomach were further identified by their odour. Mr. Alfred Taylor calculated the quantity of savin contained in the stomach at from twenty-five to thirty grains. The deceased had vomited freely, and brought up a large quantity of green matter which the medical attendant took for bile. The absence of other poisons, whether mineral or vegetable, was ascertained by Mr. Taylor. The jury returned a verdict "that the deceased, Caroline Hillman, died from the effects of a certain poison called savin, but whether taken for the purpose of destroying life or procuring abortion, there is not sufficient evidence to show, and that her male infant died a natural death."‡

13. *Poisoning by sulphate of quinine.*—M. Desiderio communicated to the February sitting of the Royal Academy of Medicine, the results which he had obtained relatively to the action of this substance, by means of numerous experiments on animals as well as by observations at the bedside. The effects upon animals are in every respect similar to those observed in the human subject; namely, drowsiness, an indisposition to motion, unsteadiness of gait, dimness of vision, and drooping of the eyelids. An alcoholic solution

* Gaz. Méd. de Paris, Fevrier 1845, p. 126. † Annales d'Hygiène, Janvier 1845, p. 179. ‡ Med. Gaz. Aug. 8, 1845, p. 646.

of morphia produces analogous effects. Hence, when given with sulphate of quinine it increases its action. On the contrary, laurel water counteracts to a certain extent its effects, and may be considered as an antidote. Bleeding is still more efficacious, and digitalis, also, has appeared to be useful.*

14. *Poisoning by bad meat acting on vessels of copper.*—On the 15th April of this year the patients, sisters of charity, and officials of the Beaujon Hospital, were suddenly, and nearly simultaneously, seized a few hours after dinner with violent colic, frequent and copious purging of bloody mucus, and painful tenesmus. In many instances the symptoms were extremely severe, and they were obviously due to poison. Soups, vegetables, and meat, and the evacuations of the patients, were accordingly submitted to chemical examination, and were found to contain copper. The mere discovery of this poison, however, was not sufficient; for it appeared that many patients who had partaken of the same food escaped, and the meat was forthwith suspected. One of the sisters, the superintendent of the kitchen, recollected that two kinds of meat had been used—a shoulder and a leg of beef—and that those only who had partaken of the latter suffered. Some of the leg still remained; it was cooked, and again eaten; the same symptoms ensued, and the sister nearly lost her life. Nothing of the kind occurred with the shoulder. It was, therefore, evident that the leg was unsound. It appears that on the day of the accident, the contractor had sent to the hospital a quantity of meat, the cellular tissue of which was infected, and evidently diseased; it was accordingly rejected by the superintendent. The contractor immediately killed an ox, which was reported to have just come off a long journey, and consequently in that febrile state which the butchers technically call *heated;* and the portion of it brought to the hospital still reeking, was also rejected. He then appealed to the central administration, which, without previous inquiry, ordered it to be accepted. This was the cause of the symptoms, the presence of copper being thus explained: *Meat of this nature generates a quantity of ammonia, which, in spite of the tinning, attacks the copper, hence the formation of ammonuriet of copper, which passes into the broth, and is superadded to the deleterious principle of the meat itself.*†

15. *Mode of operation of poisons.*—An interesting question connected with the *modus operandi* of poisons has been lately submitted to experiment by M. Andouard of Beziers, viz., Do poisons, and soluble salts, taken by the mother, reach the body of the fœtus? The following are the conclusions to which he has arrived:—1. Poisons and soluble salts reach the fœtus, provided that the death of the mother does not follow instantly on the swallowing of the substance. In this last case, the placenta alone is impregnated with that substance, or, if the fœtus receive it, the quantity is so small as not to be appreciable by analysis. 2. If we have reason to suppose that a pregnant woman has died poisoned, we should not neglect to search for the poison in the placenta, the liquor amnii, and the fœtus.‡

M. Orfila, in an essay in the 'Annales d'Hygiène,'§ devotes himself to the refutation of two errors against which he thinks it necessary to caution those engaged in medico-legal inquiries in cases of poisoning. The first is that of requiring distinct proof that the quantity of a poison discovered in the body by analysis is sufficient to destroy life; the second is that we

* Archiv gén. de Méd., Mars 1845, p. 373.

† Annales de Thérapeutique, Mai 1845; and abstract in the London and Edinb. Monthly Journal, July 1845.

‡ Acad. Royale des Sciences de Paris, Séance du 24 Mars. § April 1845, p. 347.

operate more surely if we analyse a small portion of an organ (the liver for instance,) than if we employ a larger quantity. It would seem scarcely necessary to occupy upwards of twenty pages in the refutation of two errors so patent as these; but as it has appeared otherwise to this distinguished authority, the subject is here briefly referred to. It must be obvious that if in every case we were to insist on the discovery in the contents of the stomach or the organs of the body of a quantity of poison sufficient to destroy life, many criminals, now justly condemned, would be allowed to escape; and that, on the other hand, if we were to prefer the use of a small portion of the contents of the stomach, or a small fragment of the liver, to a larger quantity of either, we might fail to discover a poison which nevertheless existed in sufficient quantity to be identified by operations on a larger scale. The only case in which operations on a larger scale are to be deprecated is where the reagents we employ are in such quantity as, though apparently pure, to furnish the very poison of which we are in search.

16. *On copper and lead naturally contained in the human body.*—M. Devergie, in a paper which forms a rejoinder to a memoir read at the academy, by MM. Danger and Flandin, in which they call in question the assertion of MM. Hervy and Devergie, that the body naturally contains a certain proportion of copper and lead, confirms his original statement by the results of a new series of experiments, performed in conjunction with M. Boutigny. The following are the conclusions at which he arrives. 1. The stomach, the intestines, and all the organs of the economy furnish, on analysis, traces of copper and lead. 2. The proportion in which these metals are found increases with age. It is small in the new-born infant; it is much more considerable in the adult. 3. A chronic malady, during which the food is greatly diminished, appears singularly to lessen the quantity of copper and lead in the organs of the body. 4. This difference confirms the natural supposition that the source of these metals is the meat and vegetables used as food. 5. In all cases the proportion of copper is greater than that of lead. The theory that the copper and lead naturally contained in the human body is supplied by the food is strongly supported by the fact that copper has been found in wheat, barley, rye, oats, rice, tea, coffee, sugar, sorrel, chicory, chocolate, gelatin, the flesh of the ox, &c.; and that it gives its green colour to sorrel, spinach, and girkins. The use of copper vessels in cookery will also account for the introduction of the metal into the body.*

17. *Action of charcoal on solutions of metallic salts.*—M. Chevallier† has instituted a series of experiments on this subject, to which his attention was directed in consequence of having to examine wine largely impregnated with lead, but which, after being decolorized by animal charcoal, was found to have lost all trace of that metal. The author in the present communication limits himself to the salts of lead, in respect to which he establishes the following facts:—That vegetable charcoal, unwashed animal charcoal, and animal charcoal washed and purified from carbonates and phosphates, not only, as is well known, form with colouring matters, insoluble precipitates, but unite with metallic oxides, so as to separate them from the acids with which they are combined. Charcoal has this effect on aqueous, acetous, alcoholic, and vinous solutions of the salts of lead, though vegetable acts more feebly than animal charcoal. This property which charcoal has of separating the metallic oxides from their solutions M.

* Annales d'Hygiène publique, Janvier 1845, p. 142. † Ib. p. 135.

Chevallier thinks has an important medico-legal application; for in many cases medico-legal authorities prescribe the use of animal charcoal as a decolorizing agent of metallic solutions. M. Chevallier's experiments were commenced in 1843, in ignorance of the previous researches of Graham.

§ II.—*Unsoundness of Mind.*

18. *Plea of insanity in criminal cases.*—At the Cumberland Midsummer Assizes, Ann Shepherd, aged 34, a female in good circumstances, was indicted for stealing a fur boa, the property of Martha Barwise, of Whitehaven, and was acquitted on the ground of insanity, from suppression of the menses. When charged with the theft she did not deny the possession of the boa, and at once gave it up, speaking incoherently of its having been brought to her by "the prisoner," or by "the boy." It appeared from the evidence of her mother, and several other witnesses, that since the age of 18 she had been subject to amenorrhœa, which "made her act oddly at times, and made her a little wandering." "She was flighty, and did ridiculous things," exhibiting delusions, believing things to have happened which had not occurred, wandering from home, being unusually talkative, and creating by her strange behaviour the suspicions and anxiety of her relations. When confined in the Bridewell she was flighty, rambling, and talkative; did not appear like any other person; her demeanour was very strange, so that one of the two magistrates who took her examination pronounced her mad. No evidence was adduced of the menses having been suppressed at the time of the theft, but the jury, on taking all the circumstances of the case into the account, brought in a verdict of *not guilty*. A full account of the case will be found in the 'Monthly Journal of Medical Science,' (No. 56, August 1845.)

A second case, in which the prisoner was acquitted on the ground of insanity, is briefly noticed in the same journal (Sept. 1845). It is that of Henry Louis Goule for the murder of his wife, whom he suspected of undue intimacy with several gentlemen. The evidence which led to the verdict of "not guilty, on the ground of insanity," consisted in showing that the prisoner some time previously had received a severe wound on the head; that before it was perfectly healed, he wandered away, and remained for some days, when he came back in a very excited state; that he had since that time been wild in his eye and eccentric in his manner; had had a fit; and within a fortnight of the fatal act had complained very much of his head. This case was tried on the Northern Circuit.

An abstract of a report of the trial of Abner Rogers, jun., indicted for the murder of Charles Lincoln, jun., before the Supreme Judicial Court of Massachusetts, holden at Boston on Tuesday, Jan. 30, 1844, by George Tyler Bigelow, and George Bemis, Esqs., counsel for the defendant, will be found in Dr. Huston's 'Medical Examiner,' February 1845. [The Chief Justice, in the course of his charge, made some remarks upon the nature and value of medical evidence, contrasting very favorably with the charge of the judge in the case of Gibson, reported in the 'Abstract' for the first half of this year; and the event justified the verdict as completely as in the case of Gibson it proved its injustice.]

The reader is also referred, for illustrations of certain questions connected with unsoundness of mind, to some portions of the evidence given before a commission *de lunatico inquirendo*, in the case of Mr. Thomas Carpenter.*

* Dublin Med. Press, July 16, 1845.

§ III.—*Sudden and violent Death.*

19. *Introduction of air into the veins.*—M. Turchetti, in a memoir read at the Scientific Congress at Milan, in 1844, insists on the fatal consequences of this accident, and on the necessity in medico-legal inquiries of bearing in mind the possibility that death attributed to wounds of the large venous trunks may be really due, not to the wound itself, but to the introduction of air consequent upon it.*

20. *Perforation of the stomach.*—Mr. Edw. Young of Belper has reported the following case of perforation of the stomach. A young woman, aged 19, who had previously enjoyed tolerable health, though occasionally the subject of dyspepsia, and who had followed her usual employment in the factory, until the day before her illness, was suddenly seized, after a long walk, with violent pain in the abdomen, followed by symptoms of acute peritonitis. She experienced the most marked relief from the abstraction of eight ounces of blood from the arm. She was seized on the afternoon of one day, and died at nine o'clock on the morning of the next. On examining the stomach, a circular aperture was discovered, with *hard and cartilaginous* edges, (large enough to admit the stem of a tobacco-pipe,) above the pyloric orifice. With the exception of this thickened and indurated portion, which scarcely exceeded an inch in circumference, the organ was healthy. There was extensive inflammation of the peritoneum, the contents of the stomach were effused into the cavity, mixed with an abundance of serum, shreds of lymph, and a considerable quantity of pus.†

Mr. William Collyers, surgeon of Kenton, has reported in the same journal a case of ulcerated stomach, causing death by being suddenly detached from its adhesion to the peritoneal lining of the abdomen. The patient, a healthy, robust, and stout female, aged 21, was suddenly seized, soon after a hearty breakfast, with very severe pain in her left side; she shrieked violently, became faint, fell down in the street, and expired after suffering intense agony for three hours. The opening was on the anterior part of the lesser curvature of the stomach.‡

21. *Death from drowning.*—A woman in full health was observed intoxicated on the banks of the Shuylkill, about one hour before the body was discovered in very shallow water. She had not, therefore, remained long under water. The body was examined about sixteen hours after death. The face was swelled, and of a mottled purple. The arms and thighs presented patches of discoloration; and a small quantity of whitish froth issued from the mouth, the amount of which was not increased by pressure on the chest, although a small quantity of watery fluid escaped when the body was turned over. On opening the chest, numerous old pleuritic adhesions were found, on the removal of which, and the consequent compression of the lungs, a discharge of watery froth took place from the mouth. All the parts of the pulmonary tissue, especially their posterior portions, were engorged with blood, and were much heavier, and of a darker red colour than in the normal state. The tracheal and bronchial tubes contained the same kind of watery froth, or frothy mucus, as that which issued from the mouth. The liver was large, engorged, and of a bright red colour. The right cavities of the heart and the coronary veins were filled with dark fluid blood. The left cavities were empty.§

* Encyc. des Sciences Méd. Avril 1845, p. 248. † Prov. Med. and Surg. Journal, July 23, 1845. ‡ Ibid. Aug. 27, 1845. § Dunglison's Clinical Lecture, Med. Exam. New Series, Nov. 3, 1845.

22. *Death by strangulation.*—Dr. E. Duchesne has written an elaborate memoir on death by strangulation, in which he has brought together a large number of cases of incomplete suspension.* Of these cases 15 are from Marc, 16 fom separate publications and periodicals, published in the last fifteen years, and 27 from the author's own experience or that of his colleagues; making a total of 58 cases. The following are the conclusions which he draws from these cases. 1. Suicide by strangulation, with incomplete suspension, is an ascertained fact, established by numerous authentic observations. 2. Suicide by strangulation ought to be admitted (as possible?) whatever may be the position in which the body is found, and even though it should rest exactly on the two feet. 3. The sensations experienced by those who hang themselves are such, that they do not wish, or are not able, to arrest the execution of their fatal projects.

The most common position in which suicides by strangulation are found is with the toes, heel, or even the sole of the foot touching the ground. This happens in about half the cases. In more than half the cases the instrument of death is a rope, or a cord made out of their sheets or shirts. Handkerchiefs and cravats are much less frequently employed.

The following are the ages in 52 out of the 58 cases: four from 12 to 20; five from 20 to 30; nine from 30 to 40; fourteen from 40 to 50; six from 50 to 60; five from 60 to 70; five from 70 to 80; four from 80 to 85. The youngest was 12 years old, the oldest 83. The greatest number occurred from 40 to 50, both in males and females.

§ IV.—*Wounds.*

23. *Blood-stains.*—M. Orfila† has instituted a series of experiments on a new mode of distinguishing stains of blood on linen and other fabrics from stains produced by other substances. The motives which led him to institute this inquiry will be understood from the following statement. About six years ago M. Persoz, of Strasburg, stated that he had used hypochlorous acid‡ to distinguish blood-stains from others produced by wine, and that he had found that the acid in question destroyed all stains except those produced by blood and rust. Soon after this fact was communicated to M. Orfila, he had an opportunity of applying it in a medico-legal case, when the statement of M. Persoz was to a certain extent borne out. Still more recently MM. Magonty and Loust, of Bordeaux, wrote to M. Orfila to request that he would inform them of the best method to employ to ascertain the nature of certain stains found on the clothes of an accused party, which they were unable to satisfy themselves by the ordinary methods of investigation were caused by blood. Orfila, in reply, advised the employment of hypochlorous acid. MM. Magonty and Loust immediately proceeded to perform a series of comparative experiments, with the stains in question and recent blood-stains, which resulted in partially confirming the statements of M. Persoz, and in rendering it probable that the stains on the clothes of the accused had been produced by blood. M. Orfila determined to submit the statements of M. Persoz to the test of a careful and minute experimental inquiry. He accordingly performed a series of thirty-nine experiments on

* Annales d'Hygiène, Juillet and Octobre 1845, pp. 141, 346. † Ibid.

‡ Hypochlorous acid may be obtained by agitating a solution of deutoxide of mercury in chlorine gas; the gas is rapidly absorbed; the oxy-chloride of mercury is deposited, and a liquid compound of oxygen and chlorine remains.

the action of hypochlorous acid on blood-stains, on spots produced by various colouring matters, and on the action of water on stains of blood. The following is an abstract of the conclusions which he draws from these experiments. 1. Of all the means hitherto proposed for distinguishing stains of blood, that which consists in treating them by water, and subsequently testing the solution, as recommended by Orfila in 1826 is without doubt the best. M. Persoz is evidently mistaken when he supposes that blood-stains found on different tissues often lose the property of dissolving in water, and cannot therefore be detected by its aid, for M. Orfila found by a large number of experiments that in almost every case spots even of the longest standing, whether on clean linen, or on linen covered with grease, or upon iron, always yielded to water a sufficiency of their colouring matter to prove them to be blood: on the other hand, he found, from numerous experiments, that no colouring matter whatever applied to linen is acted on by water in the same way that blood-stains are. 2. Hypochlorous acid is far from possessing the advantages attributed to it by M. Persoz; for in his (M. Orfila's) experiments, most of the blood-stains, whether thick or slight, recent or old, on linen or on iron, disappear nearly or entirely on being immersed in the acid for some time; that some of those spots which do not entirely disappear, so far from changing to a reddish-brown colour, only leave a grayish stain behind them. It is true, however, that some of the spots, though they disappear in the greater part of their extent, preserve in their centre a brownish-red colour. It is true that to this extent M. Persoz's announcement holds good, that if the stain be exposed to the action of the acid for a few seconds, or one or two minutes only, the spots remain and become brown, even though they were dry and of long standing, but on the other hand, stains made with a mixture of fat and orchanet, or with charcoal and fat, or with madder, poppy, chelidonium majus, &c. &c. are acted on by the hypochlorous acid in very nearly the same manner as stains of blood, and therefore this acid cannot be a certain test for coloured stains, even when the immersion has been but of short duration. 3. But though this acid is in itself insufficient to determine positively that a stain has been made by blood, it may be employed with some advantage as an accessory, provided it be only left in contact with the stain for one or two minutes at most; in fact, various colouring matters take the same shade with this acid that blood does, but some of them are altogether discharged by it in less than two minutes, while so short a time is insufficient for blood-stains to be discharged by the same agency. 4. The hypochlorous acid is perfectly inefficacious for distinguishing a thick deposit of blood on linen or iron, from iron-moulds, or a mixture of colcothar (sesquioxide of iron) and grease, because they all remain even after a prolonged action of the acid; but they may be distinguished by treating the spots with protochloride of tin acidulated with hydrochloric acid, which the thicker stains of blood resist, while the other stains do not disappear till the end of some hours. 5. The action of hypochlorous acid upon stains of blood thrown on the substance by a jet, or by immersion of the linen in it, differs sensibly from that which it exercises upon spots which we may call *secondary*, that is, those which are made by contact with some other fabric on which blood has spirted; the latter resist the decolorizing action of the acid much more feebly than the former.

§ V.—*Identity.*

24. *Personal identity.*—Dr. Henri Bayard has published three cases of disinterment for the purposes of identification. The only remaining parts of the body were the bones, and the attempt at identification was successful in one only of the three cases. The principal point of interest in the first case was the coincidence of the calculations, based on the measurement of the long bones with the averages ascertained by Orfila. The long bones of the upper and lower extremities were measured, and the stature calculated from their length was 1 metre 54 centimetres. It was rendered in the highest degree probable by the circumstantial evidence, that the skeleton belonged to one Adnet, who had disappeared two years before. His wife stated that her husband was as nearly as possible of her own height, and that he could wear her shoes. She measured 1 metre 52 centimetres. A certificate under the hand of M. Fournier, the mayor of the commune in which Adnet resided, gave as his height, determined for the purposes of the conscription, 1 metre 53 centimetres. So that the calculated stature 1 metre 54 centimetres) corresponded very closely with the ascertained stature. This correspondence must be regarded as a happy coincidence, for Orfila's own measurements give for the same length of long bone a considerable range of stature, and it is obvious that Dr. Bayard might have met with an extreme case instead of this very fortunate average.*

25. *Doubtful sex.*—Dr. Otto, of Copenhagen, gives a minute description of a male, who, up to his 26th year, was mistaken for a female, and educated as such. He was a hypospadian, with cleft scrotum, containing testicles, and a blind sheath-like canal, an inch in length, beneath the urethra, terminating between the bladder and rectum. He had had no periodical discharge of blood, but was subject to erections and emissions. The form was much more that of a man than a woman.†

§ VI.—*Delivery.*

26. *Delivery during sleep.*—M. Schultze, of Spandow, was called, on the 25th of May 1844, to a woman pregnant for the fourth time, at full term, and whom he found in so profound a sleep that he could not rouse her, either by shaking her, or by the vapours of ammonia, ether, &c. applied to the nostrils. On the third day of this unnatural sleep the female was delivered, without awaking, of a male child, at full term, alive and well. On his visit of the morrow, M. Schultze found that his patient had been awake for a short time; she had recovered of herself, and as she had no recollection of what had happened, she appeared much surprised to find herself safely delivered.‡

27. *Rapid delivery without previous pains.*—Mr. J. B. Prowse, in a letter to the 'Lancet,' relates the following case, as having an obvious bearing on the question of infanticide. "When a pupil, I was engaged by a poor woman to attend her during her accouchement; she was a native of Ireland, and a remarkably fine and well-formed person. She had already borne two children. On the day of her delivery I was requested to call on her, for she thought her confinement was near at hand. Her attendants said she was in no pain, but that she appeared uneasy. I waited on her,

* Annales d'Hygiène, April 1845, p. 379. † Zeitscrift für die gesammte Med. Feb. 1845, p. 237. ‡ Medicinische Zeitung.

and found her on the bed, smiling, and expressing a hope that she had not summoned me unnecessarily; but that as she never suffered much in labour, I would excuse her if she was wrong. On examination I was surprised to find the head of the child in the upper part of the vagina, and was puzzled to account for there having been no pains to lead to a suspicion of the real nature of the case. No sooner was my hand withdrawn, and my back turned to speak to the attendants, than there occurred one single effort of the uterus, and the child was in the world."*

§ VII.—*Medical Evidence.*

28. *Coroner's court.*—The 'Provincial Medical and Surgical Journal'† copies from the 'Exeter and Plymouth Gazette' a case of poisoning, with a letter on the subject, addressed to the editor, by Mr. William Trevor, of Dalverton. The statements contained in Mr. Trevor's letter are of a nature to require that the widest publicity should be given to them, and although several weeks have elapsed since that letter was written, it may not be amiss to make a short extract from it. "The facts of the case are briefly these. An unmarried young woman, living in service, is taken suddenly and violently ill, and it is immediately suspected that she has taken poison, which, however, she does not acknowledge. Medical assistance is called in; and upon the arrival of the surgeon, to *him* she for the first time confesses that she has taken poison. The existence of pregnancy is discovered. In the discharge of what he conceives to be his duty, the surgeon informs her that she is in imminent danger, and she then makes certain statements. After four days of severe suffering, during which this same surgeon is in frequent attendance, this unhappy creature dies; and at the inquiry which subsequently takes place as to the cause of death, this surgeon is not only not called upon to give evidence, but is absolutely the only person who was about the deceased who is not permitted to do so. And why? Because if he was examined he would be entitled to a fee of one guinea!" After this important omission, it will create no surprise to state that the inquiry was conducted in a very hasty and slovenly manner, and that, without inquiring into the state of the mind of the deceased, the jury returned a verdict of *felo de se*. It is to be feared that this is by no means a solitary example of the interference of a short-sighted and most culpable economy with the duties of the coroner and his court.

* Lancet, July 12, 1845. † July 9, 1845.

VII.

REPORT ON THE PROGRESS OF MATERIA MEDICA AND PHARMACY.

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§ I.—*Pharmacy.*

1. *On the distilled waters of our Pharmacopœias.*—By Robert Warrington. The formula given for the preparation of distilled waters in the London Pharmacopœia of 1836, is as follows: To a specified quantity of material, whether it be essential oil, flowers, herbs, bark or berries, let two gallons of water and seven ounces of proof spirit, having a specific gravity of 0·920, be added, and submit the mixture to the process of distillation until one gallon shall have passed over. Presuming that the entire amount of spirit employed passes over in this operation, the resulting product will contain a quantity that will be equivalent to about 4½ ounces of rectified spirit of sp. gr. 0·838.

The Edinburgh form has rather less spirit to the proportion of materials; two gallons of water and three ounces of rectified spirit are so employed, and a gallon distilled.

The Dublin formula differs from the foregoing, in ordering half an ounce of rectified spirit to be added to each pound of the water after distillation, or in the ratio of five ounces to the gallon.

In the course of other investigations some years since, Mr. Warrington found that when a very small quantity of alcohol was added to distilled water, and the mixture kept exposed to the air for a length of time, the containing vessel being carefully covered with paper to exclude the dust, it became gradually converted into acetic acid, and, by analogy, he was led to believe that the same effect would take place in these distilled waters; the following experiments were therefore put in operation to test the accuracy of these ideas.

In the distillation of essential oils, it is well known that the water which passes over is opalescent from its being highly charged with the oil, and that when thus impregnated, it will keep perfectly sound for a great length of time. Distilled waters were prepared from various of the essential oils, without the addition of any spirit, and these were taken as the basis of the following experiments:

Equal portions of the waters obtained from the oils of dill, caraway, pimento, spearmint and cinnamon were taken, and to one half the proportion of spirit ordered by the London College was added, the other half remaining in its original state; these were all loosely corked, marked, and placed aside. After remaining six months they were examined, when the spearmint and caraway waters with the spirit, were found to be distinctly acid, reddening litmus paper, and causing an effervescence with carbonated alkalies; all the others remained perfectly sound. They were again examined after a lapse of twelve months; the acidity had increased in the previous cases, while

the same waters, without the spirit, remained perfectly unchanged, and evidenced no signs of acidity. On examination after another twelve months, they did not appear to have undergone any further alteration.

Another point in favour of these distilled waters keeping, was their having been prepared from their respective essential oils, and not from the herb, seed, or bark. It is stated that these waters are liable to become mucilaginous and sour when long kept, and that the small quantity of spirit is added to prevent this; from the foregoing experiments, however, it will be evidently seen to produce a directly contrary effect, and the formulæ of the Edinburgh and Dublin Pharmacopœias will be equally in error on this point.

It is curious that of the European Pharmacopœias to which he had access, not one labours under this error, their instructions being simply to distil the materials with water.

On searching back through former editions of the London Pharmacopœia, to ascertain, if possible, whether the formulæ had always been the same, and if not, when this erroneous alteration had been effected, he found that in the Pharmacopœia of 1624 two classes of distilled waters are specified, entitled simple, and compound or spirituous; the former made without the addition of any spirit, either in the process or afterwards, the latter similar to the preparations entitled spirits of the present day; after this date the error of adding small portions of spirit seems to have originated, and to have been regularly copied, with very little deviation, from edition to edition, down to the year 1836, the general directions being to distil a certain quantity of the water from a given weight of material, and then to add five ounces of proof spirit to each gallon, *that it may be preserved*, or rather, in reality, in many cases, to spoil it. In the edition of 1836, the proportion of spirit was increased to the formula that has been already given, and this was also the form prescribed in some of the various dispensatories about the middle of the eighteenth century.

On examining into the quantity of acid generated in the foregoing experiments, he found that half a pound of the caraway water required four grains of dry carbonate of soda to effect perfect neutralization, which is equivalent to 4·45 grains of real acetic acid. This acid was also isolated by distillation, and its identity proved by various tests.

We now pass on to the extemporaneous preparation of flavoured waters from their respective essential oils. The general formula given in the Pharmacopœia of 1836, in which it is introduced for the first time, is to triturate carefully together one drachm of the essential oil with one drachm of carbonate of magnesia, and afterwards with four pints of distilled water, and then strain. Now on examining the waters thus prepared, they are all found, without exception, to contain a notable quantity of magnesia, the proportions taken up seeming to vary with the various essential oils employed, all other circumstances remaining the same. Dr. Pereira (in his valuable 'Elements of Materia Medica,' vol. i, p. 258) thus speaks of these waters: "The magnesia (carbonate of magnesia) effects the minute division of the oil. Moreover, when the oils possess acid properties, as the old oils of pimento, cloves, and cinnamon, it probably serves to saturate them. Prepared in this way, the medicated waters usually contain a minute portion of magnesia in solution: hence, by exposure to the air, they attract carbonic acid, and let fall flocculi of carbonate of magnesia. Moreover, the magnesia unfits them for the preparation of solutions of some of the metallic salts, as bichloride of mercury and nitrate of silver."

The method of examination adopted in the following experiments was

to take a measured volume of the water, say 1000 grains, and evaporate it to dryness at a temperature not exceeding 212°, then to ascertain carefully the weight of the residue, redissolve it in dilute acid, and test the resulting solution. Magnesia in the form of carbonate was invariably found, together, frequently, with resinous matter from the oil; this was more especially the case where oils of considerable age had been employed. By this mode of operating, the results obtained range from 0·50 grains, in the 1000 grain measures of the water, as in peppermint-water, to 1·20 grains in dill and pimento waters; many others were tried, which ranged between these two points. It may perhaps be as well here to mention, that it was observed very soon after the application of the heat in evaporating, that flocculi of carbonate of magnesia invariably separated.

The general opinion has been that these waters were formed in consequence of the magnesia as a base favouring the union of the oil and water, and thus implying some combination of these materials; but Mr. Warrington was led to believe, from various circumstances presenting themselves during these experiments, that this was not in any respect the true cause, and that the carbonate of magnesia acted simply as a mechanical subdivider of the oil, so that the water acted as a solvent with greatly increased effect upon an enormously extended surface of the essential oil, as is the case in distillation, where the cohesive attraction of the molecules being overcome by the influence of heat, the vapours of the oil and water rise together, and are mutually diffused and pass over into the refrigerator or worm to be condensed, and thus solution is to a certain extent effected. Under this impression the same experiments were repeated, substituting for the carbonate of magnesia the kaolin, or porcelain clay of Cornwall, or finely-divided silica in the form of powdered flints, and with perfect success, the resulting medicated waters being perfectly colourless, transparent, and having a full flavour of their respective oils. On evaporation no residue was obtained, except in a few instances a small quantity of resinous matter, where, as before mentioned, oils had been used which had been made a long time: this amounted in the case of pimento-water to 0·50 grains.

Two questions remain now to be settled, arising out of the foregoing experiments; first, does the magnesia enter into combination with the acid oils existent in some of the essential oils used, as pimento, &c.? or, secondly, is the oil simply taken into solution by the distilled water? The fact of the carbonate of magnesia separating from the solution by the application of heat, and remaining always in the state of carbonate on evaporation to dryness at a temperature of 212° Fahr., is a strong argument in opposition to the first of these questions, as the view taken by Dr. Pereira does not seem possible; namely, that the magnesia of the carbonate of magnesia first combines with the acid of the oil, which, as a consequence, implies the evolution of its carbonic acid from its weaker affinity, and that then, by the absorption of carbonic acid from the atmosphere it is again deposited as carbonate of magnesia, thus making its affinity stronger; the second position being directly contradictory to the first.

On trying a repetition of the same experiments with the same materials, but omitting the essential oil, and going through precisely the same routine, he obtained from 0·50 to 0·70 grains of carbonate of magnesia by evaporation, as the average results of many trials; so that from these data we may fairly conclude no combination of the magnesia and oily acids had taken place, but that it was simply a solution of the earthy carbonate in the distilled water; nevertheless, in many of the experiments, the presence of the different oils evidently affected the solvent power of the water, and

thus directly influenced the quantity of carbonate of magnesia taken up; and the resin existent in some of the old oils will account for the occasional increase of weight over this quantity, for it has been shown that this resin is soluble to some extent in water.

There can be no doubt, from the above experiments, that any insoluble substance in a fine state of division will answer the same purpose as the carbonate of magnesia much better, as, for instance, very fine porcelain clay, finely-divided silica, powdered glass, pumice-stone, &c. The use of carbonate of magnesia for the extemporaneous formation of these waters, probably originated with the pharmaceutist, as being a material generally at hand, and it is well known to have been the substance usually employed for this purpose for a great number of years, and was used by the perfumers to produce the same results, long before its introduction for medicinal preparations.*

2. *On the preparation of medicinal tinctures.*—By Henry Burton, M.D. The author recommends the interposition of a bag, in which the matters to be exposed to the action of the solvent are to be suspended, and macerated in the spirit without agitation. By this process almost all the medicated tinctures may be prepared of equal strength to the corresponding tinctures made by the old plan, with less risk of incurring a loss of strength by inattention to the degree and repetition of the agitation which is requisite on the old plan, with less labour, and also a less expenditure of spirit. The bag, which is made of linen or a piece of calico, and fastened with a string, should be of the same shape as the vessel in which it is suspended. The substances, reduced to the state of disintegration directed in the London Pharmacopœia, should be allowed to fall into the bag by their own gravity, without the application of pressure, except in the cases of hop, hyoscyamus, and conium, in packing which, especially hop, a moderate degree of pressure will be required to contract their bulks within the requisite limits.

The containing vessel should always rather exceed twice the height of the packed bag, so as to allow of its being raised under cover, and drained above the surface of the tincture. During the process the bag should be raised, and drained under cover, and again lowered as soon as the tincture has entirely ceased to drain. The process is perfected in 2—4 days, when small quantities are operated upon, but is protracted two or three days when large quantities are prepared.†

3. *On ethereal tinctures.*—By Emile Mouchon. The author, in a very elaborate essay on this subject, gives the result of his examination of the ethereal tinctures of aconite, arnica, asafœtida, balsam of tolu, belladonna, buds of fern, castoreum, cantharides, cicuta, digitalis, hyoscyamus, saffron, stramonium, and valerian. In the majority of these cases it appeared that the active principle was not taken up by ether, and that after the ethereal extraction the extract yielded to alcohol was as strong as usual. His conclusions are drawn from an extensive series of observations on the lower animals.

4. *On the variations in the three British Pharmacopœias.*—In a paper communicated to the Pharmaceutical Society, Mr. Squire has strongly insisted on the advantages of a national pharmacopœia. In the following remarks on the subject of this article the order of arrangement of the London Pharmacopœia is adopted.

Acidum aceticum.—This name is applied in the London Pharmacopœia

* Proceedings of the Chemical Society. † Med. Gaz. July 4 and 11, 1845.

to an acid consisting of 30·8 parts of anhydrous acetic acid, and 69·2 parts of water. In the Edinburgh Pharmacopœia the same name indicates the strongest acetic acid that can be obtained, namely, that containing only one atom, or about fifteen per cent. of water; the acetic acid of the Dublin College contains about 35 per cent. of water. The composition of these three acids, all bearing the same name, may be thus represented:

	Edinburgh.	Dublin.	London.
Anhydrous acetic acid	85	65	31
Water	15	35	69
	100	100	100

Acidum hydrochloricum dilutum.—There are considerable discrepancies in the strength of this, as well as of the other diluted mineral acids, as prepared according to the instructions of the three colleges, as the following statements will show:

	Dublin.	Edinb. and Lond.
Hydrochloric acid	10	5
Water	11	15
	21	20

Acidum nitricum dilutum:

	Dublin.	Edinb. and Lond.
Nitric acid	3	1
Water	4	9
	7	10

Acidum sulphuricum dilutum:

	Dublin.	London.	Edinburgh.
Sulphuric acid	1	1½	1
Water	7	14½	13

Acidum hydrocyanicum dilutum.—This acid, made according to the London Pharmacopœia, contains 2 per cent. of real hydrocyanic acid; that of the Edinburgh Pharmacopœia contains rather more than 3 per cent.; while that of the Dublin Pharmacopœia is necessarily of variable and uncertain strength. In this country Scheele's acid, which contains from 4 to 5 per cent. of real acid, is very frequently prescribed by medical men. These differences in a medicine of such energy and importance are much to be regretted. The strength of the London Pharmacopœia is undoubtedly preferable to the others.

Among the ethereal preparations, there is ordered, in the London Pharmacopœia, a compound called oleum ethereum. There is no formula for the preparation of this oil in either of the other Pharmacopœias, and the process given by the London College is said by some practical men to be impracticable, or at least to be so uncertain in the product afforded, as to render it very expensive; and it is doubtful whether the substance generally met with under the name of oleum ethereum is really that which the College have described.

Spiritus etheris nitrici.—There is a great difference between the strength of the sweet spirit of nitre made according to the London, and that made according to the Edinburgh Pharmacopœia. The latter directs a pure

hyponitrous ether to be first made, and then one part of this by measure to be mixed with four parts of rectified spirit. The resulting spirit, therefore, contains one fifth of its volume of hyponitrous ether. The process of the London College yields a product which varies considerably in strength, the proportion of ether present depending upon the quantity of ingredients operated upon, and the rapidity with which the distillation is conducted. When made according to the London process, it never contains half as much ether as that made by the Edinburgh process.

Aconitina is directed in the London Pharmacopœia to be made from Aconitum paniculatum; in the Edinburgh, from Aconitum napellus. Dr. Fleming states that the Aconitum paniculatum contains very little of the alkaloid, and other authors have represented it as being much less active than the species ordered by the Edinburgh College. The Aconitum napellus is generally used.

Liquor ammoniæ of the London and Edinburgh Pharmacopœias, has a specific gravity ·960, and contains 10 per cent. of ammonia; that of the London Pharmacopœia has a specific gravity ·950, and contains 12·5 per cent. of ammonia.

Aquæ destillatæ.—Mr. R. Phillips many years ago, in his Notes on the Pharmacopœia, pointed out the injurious effect of the spirit ordered to be added by the college, in causing distilled waters to become acid, the spirit being converted into acetic acid. This has also been recently noticed by Mr. Warrington in a paper read before the Chemical Society.* In the London and Edinburgh Pharmacopœias, the spirit is directed to be added to the ingredients previously to distillation, and it has been stated that the effect of this is to improve the flavour of the product. The Dublin College, however, orders the spirit to be added after the water has been distilled (as did a previous London Pharmacopœia), the object being, no doubt, the preservation of the water, but the contrary effect is certainly produced.

Cataplasma sinapis.—In the London Pharmacopœia, this is directed to be made by adding boiling vinegar to the powdered linseed and mustard-seed. As this cataplasm is, it is presumed, intended as a stimulant and rubefacient application, the use of boiling vinegar is obviously objectionable. The rubefacient property of the mustard depends upon the presence of a volatile oil, not originally existing in the mustard-seed, but developed by the action of heat and moisture upon two principles somewhat analogous to the amygdaline and emulsine in the almond. The principle corresponding with the emulsine is, however, coagulated by a high temperature, or by the action of acids, and is then incapable of generating the volatile oil. The stimulating effects of the cataplasm would be more uniformly and successfully produced if the mustard were first mixed with warm water, and the vinegar afterwards added.

Extracta.—In the preparation of extracts from the expressed juices of plants, the London College directs the inspissation to be effected without removing the fecula; the Edinburgh College, on the other hand, directs the fecula to be separated, and the filtered juice to be evaporated. It would be desirable to elicit information from those who have had experience in this class of preparations, and especially to ascertain how far the presence of the fecula affects the preservation and the properties of the extract. That from liquorice is very properly ordered in the Edinburgh Pharmacopœia to be made from the dried root, and that from the poppy from the unripe capsule.

* See Article 1 of this Report.

Infusa.—There is much discrepancy in the formulæ of the several Colleges for the preparation of infusions. Infusum anthemidis is ordered by the London College to macerate for ten minutes; by the Edinburgh College for twenty minutes; and by the Dublin College for twenty-four hours. The Edinburgh College has ordered cold water for making infusum calumbæ, and infusum gentianæ, and in other respects the formula for the latter infusion differs from those of the other Colleges. Again, the London College orders the infusum rosæ compositum to macerate for six hours; Edinburgh four; and Dublin half-an-hour. The infusum digitalis of the Edinburgh Pharmacopœia, is more than twice the strength of that of the London.

Liquor potassæ of the London Pharmacopœia is described in the notes as being of specific gravity 1·063; that of the Edinburgh College is directed to be made of specific gravity 1·072; and that of the Dublin of specific gravity 1·080.

Alcohol, according to the London Pharmacopœia, consists of 92 parts of absolute alcohol, and 8 parts of water; according to the Dublin Pharmacopœia it contains about 6 per cent. of water, and, according to the Edinburgh, it is, what its name purports, absolute alcohol, or nearly so.

Spiritus ammoniæ made according to the London process, consists of a solution of *carbonate* of ammonia in spirit; that made according to the Edinburgh process is a stronger solution of *caustic* ammonia in spirit. This discrepancy in the formulæ for spiritus ammoniæ, has sometimes led to a very important difference in the products of another process given in the Edinburgh Pharmacopœia, namely, that for tinctura opii ammoniata. If this tincture be made with the spiritus ammoniæ of the London College, it will contain none of the narcotic property of the opium, whereas, if made with the spiritus ammoniæ of the Edinburgh College, it will be an active and valuable remedy, constituting the Scotch paregoric.

Mr. Squire then proceeds to compare in a tabular form the corresponding tinctures of the three Pharmacopœias; these for want of space we must omit, and proceed to his concluding remarks.

Other instances of discrepances in the formulæ of the three Colleges might be adduced, but those already given will suffice for the purpose intended. He then directs attention to discrepances of another kind, *not existing among the formulæ of the different Colleges, for preparations bearing the same name,* but among formulæ all contained in the same Pharmacopœia for preparations of the same class. In alluding to these he confines himself to the London Pharmacopœia. Thus, taking, for instance, the formulæ for the diluted acids, we find no uniformity in their relative strengths or saturating powers.

There appears no reason why the liquid diluted acids should not be all of one saturating power (the hydrocyanic being made the exception to the rule). If mixed in the following proportions:—three measures of sulphuric acid and thirty of water, three of nitric acid and fifteen of water, three of muriatic acid and five of water, they will be found to have severally about the same saturating power as our present diluted sulphuric acid. They might then be accurately adjusted, so that a fluid drachm should exactly saturate twenty-eight grains of crystallized carbonate of soda.

The acetic and phosphoric acids, and any others that may at any future time be introduced into the Pharmacopœia, should be brought to the same strength. The prescriber would thus be relieved from the trouble he must now take in distinguishing between the different strengths of

this class of medicines, and the circumstance of the acids being tested as to their saturating power during the process of dilution, would ensure their uniformity.

In considering how far it would be possible to introduce a similar uniformity of strength in other classes of medicines, he has especially directed his attention to the tinctures.

By adopting the process of percolation in the preparation of tinctures, there would, of course, be no difficulty in effecting the object alluded to, and it would only be necessary to fix upon any one tincture, such as that of opium, or of foxglove, as the standard, and to adjust the strength of all the others, so that their ordinary doses should correspond. On referring to Mr. Phillips's list of doses in his 'Translation of the Pharmacopœia,' it appears that there are

12	Tinctures,	whose	maximum dose is	f℥j.
13	„	„	„	f℥ij.
11	„	„	„	f℥iij.

There are three, namely, the compound tinctures of aloes, of rhubarb, and of senna, the doses of which exceed the above.

The fluid alkaline preparations would form another class, the doses of which might be made to assimilate.

§ II.—*Materia Medica.*

5. *Cod-liver oil; its preparation and uses.*—The following observations on this important remedy are extracted from an essay on the subject by Dr. Donovan.

In the time of Dr. Percival, of Manchester, this oil was so largely employed in the hospital of the town, that nearly a hogshead of it was annually consumed. It was given in obstinate chronic rheumatisms, in sciatica of long standing, and as a restorative in old age, when, from various causes, the muscles and tendons become rigid, and the flexibility of the joints is impaired. Dr. Percival compared its effects experimentally with those of guaiacum, in diseases for which the latter was proper, and found the oil always superior. In irritable habits he found the pulse sometimes accelerated by it; a glow of warmth was sometimes felt throughout the whole body after each dose, and a gentle perspiration was often produced. He varied the dose from one tablespoonful to three, twice, thrice, or four times a day. In many cases it was found serviceable to rub the parts affected with the oil during its internal exhibition. Either fever or inflammation, he says, forbids the use of it entirely. His mode of administration was to form an emulsion of half an ounce with an equal quantity of peppermint-water, by means of forty drops of aqua potassæ, the draught being washed down with a teaspoonful of lemon-juice, to liberate the oil in the stomach. For a long time cod-oil, as a curative agent, fell into disuse in the British Isles, but in Germany its has maintained its character up the present day.

Mr. Donovan endeavours to reconcile the different accounts respecting its physical character by taking into consideration a few facts which he has himself observed. With regard to the colour, it is to be observed that we can give the oil any desired hue, from the palest yellow to the deepest brown, by a very simple means. "I was long puzzled," he observes, "by the great variety of colours which the oil assumed when the process for obtaining it appeared to me the same. At length I observed that livers, even

those that were perfectly white, gradually became red when exposed to air. When kept for a few days, a kind of flesh-coloured emulsion, consisting of oil and water, spontaneously oozed out; and the colour continually becoming more red, the contained colourless fluids appeared to undergo a process of sanguification, until at length a bloody water separated and left some detached oil. I therefore made the following experiment. Out of a large supply I selected fifty livers that were perfectly and equally pale. These were divided into five parcels of ten each; the first parcel was subjected to the process of extraction immediately; the second on the third day after; the third on the sixth day; and so on to the tenth, which was done on the thirtieth day. The resulting oils presented a series of colours, deep in proportion to the time, the first being very pale, and the last very brown. Thus the longer the livers have been exposed to air the redder they become, and the greater will be the quantity of the newly-elaborated colouring matter taken up by the oil. This will happen whether the extraction has been hastened by heat, or has proceeded in the cold; and by putrefaction of the livers the deepest colour will at length be obtained. Thus we understand the cause of the great differences in colour which the commercial oil presents; and it would be difficult to conceive how the solution of some colouring matter, derived from a kind of imperfect blood, reddened by contact with oil, could impart curative powers, and thus sustain the preference claimed for the orange oil by the German physicians. I can only say, that the pale is the only kind which, for the last three years, I have supplied abundantly to the profession, and that its efficacy has been found in many cases surprising. There is another ground on which the dark-coloured oil has been preferred by those who believe that its therapeutic agency depends on the presence of iodine. Iodine is soluble in cod-liver oil, and the solution is deep-coloured in proportion to the quantity dissolved; hence the notion naturally presented itself, that the brown oil may contain the greatest portion of iodine. To obtain some information on this subject, I dissolved iodine in pale cod oil, and thus formed a deep orange solution, of exactly the same hue as a sample that was naturally so tinged, and in which I had not dissolved any iodine. To both oils I added an equal quantity of alcohol, and, after equal agitation, poured off the alcohol from both. The alcoholic washings of the oil to which iodine had been added, rendered a mixture of water and starch purple; but the alcohol effused from the oil, naturally orange, had no such effect; hence there was no iodine present, at least in the free state, and it is only in the free state that it could communicate colour. It is to be observed, however, that for explanation of the assumed medicinal superiority of orange oil, recourse need not be had to the supposition that the curative principle is iodine, inasmuch as every known fact impugns that notion. First, many of those patients who have been cured by cod oil were not in the least benefited by a previous course of iodine; this has been shown by Dr. Taufflied. 2dly, chemical analysis has discovered only minute traces of iodine in some specimens of cod oil, and others were entirely destitute of it;* 3dly, the tendency of iodine is to render the person thin who uses it, while the effect of cod oil is to fatten. Lastly, none of the oil prepared by me, when agitated with alcohol communicated any impression of iodine, although the oil was eminently successful as a medicine, and its colour

* We have an analysis of one oil, however, which contained 0·324 per cent.; and of another which afforded but 0·162: others again contained less. See *Bennett on Cod-Liver Oil.*

contra-indicated the presence of free iodine. I adhere to the opinion formerly expressed, that the lower the temperature at which the oil is obtained the better; the degree formerly specified (192°) is too high; its tendency is to communicate a rank, fishy smell, in place of the delicate odour of that which is quite recent, and has been obtained by a very low temperature. A high heat affords the oil in greater quantity, but it has the rank smell of barrelled herrings, and will disgust and sicken the patient. A low heat, as 120° or 130°, gives a smaller product, but of a fine quality. The proper season for preparing the oil is early in January, when the livers are plump, firm, large, white, and full of oil. It is necessary to mention that the cod is subject to diseases of the liver. Sometimes the liver is found flabby, apt to lie flat on a plane surface, like a bag half empty; sometimes it is specifically lighter than water, and those that float in water should be rejected. Good livers should cut smoothly under a sharp knife, and not tear; when cut, none of the substance should flow out in a half-liquid state. When the oil has been extracted by a low heat, from sound, white, fresh, plump livers, it is an exceedingly nice article, which most people swallow without the least disgust, at least after the first two or three doses. Some take it with absolute liking; they compare its smell to that of the flesh of a lobster's claw, and I have myself used it as an excellent sauce for cod-fish. Much of the ill-repute which this oil has borne from some writers is, no doubt, attributable to the bad condition in which it was supplied. Some direct the oil to be taken in emulsion; I believe it is more easily taken by itself, or floating on water or hot milk. The dose for an adult is a tablespoonful three times a day; for the first two or three doses a dessert-spoonful may suffice. The quantity of oil produceable from livers depends on the period of the year. In the beginning of January I found that 1000 livers afforded 37 imperial gallons; at the end of February the same number of livers produced only 23 gallons of oil. In the beginning of January 1000 livers, of average size, weighed 900 pounds; while on the last day of March the same number weighed but 575 pounds. The oil was, in these different seasons, equally pale, and the livers equally white, although so much smaller and more flabby in the latter season. The stearine of the oil is abundant, and of a pearl-white colour; it always separates as a white sediment in cool weather; when warmed it melts into an oil in taste, colour, and smell the same as the oil itself, and there is no reason to doubt that it possesses the same medicinal properties. The brownest oil may be rendered nearly yellow by long-continued exposure to the sun's rays. There is a circumstance which deserves particular notice. It is proper to wash the livers from gall and filth before they are heated; but this should not be hastily performed. The gall-bladder which adheres to the liver should, in the first instance, be removed; the gall is green, acidulous, and sweetish-bitter. If the livers have been quite recent, and the heat rightly managed, the oil will be fully as thin as water; but the case will be very much otherwise under opposite circumstances. In the cod's liver the oil seems to exist combined with water, in the state of a natural emulsion; the pure oil, if violently shaken with water, will form a transitory emulsion. The natural emulsion in the liver is decomposed by heating, the water separates, and the detached oil appears. I shall now state such facts as have come to my knowledge with regard to the medical efficacy of this oil in several diseases.

The conclusions arrived at by Dr. Bennett, whose extensive knowledge and experience on this subject render him an excellent authority, will form a proper introduction. He says the placid and phlegmatic bear the admi-

nistration of cod oil the best; the plethoric worst. In scrofula, with torpidity, it is directly indicated; if irritation be present, its employment requires management and great care. The contra-indications are plethora, disposition to inflammation, profuse menstrual or hemorrhoidal discharges, total loss of appetite, nausea, and vomiting, pain in the abdomen, and it is contra-indicated during the existence of epidemic diarrhœa or dysentery. It should not be given in the morning, fasting; for adults the dose should be gradually increased to six tablespoonfuls; a fat animal diet supports the action of the oil. Dr. Bennett says, that in general articular rheumatism, where the usual remedies failed, cod oil cured speedily. A chronic lumbago, of several years' standing, was cured in seven months by the oil. A most intractable case of sciatica was also cured by taking a four-ounce dose every morning. In rachitis and scrofulous caries of the bones it was eminently successful. In no case, except rachitis, are the good effects of the oil so well established as in the atrophia mesenterica, the disease being cured by it often when every other remedy has failed, and even when all hopes of the patient's life have been abandoned. In tubercles of the lungs, which have not yet softened, or are in the first stage of softening, Dr. Häser says that this oil is by far the most useful remedy. A young man, labouring under the effects of a large vomica, attended with extreme emaciation, profuse night sweats, hectic fever, cough, loss of appetite and strength, was so far benefited by the oil, that his symptoms were almost entirely removed; but having taken a disgust to it, and it beginning to disagree with him, he relapsed and died. A woman, who laboured under all the constitutional as well as physical signs of phthisis, with a cavern in the right lung, and other bad symptoms, was completely restored by the use of this oil. Several cases of chronic affections of the skin in scrofulous constitutions have been completely cured by it when all other remedies failed. The external use is also serviceable when hard, dry scabs exist. Brefeld relies altogether on its external application. Of its efficacy in skin diseases of various kinds we have the testimony of Dr. Marshall Hall, Dr. Richter, and Dr. Nebel. In scrofulous diseases of the eye, the oil has been found of great benefit by Brefeld, Carron du Villards, Von Ammon, Pifford, Abendheimer, Gruby, and Dieffenbach. Such is a summary of the statements of Dr. Bennett. The efficacy of cod oil in consumption, when there were cavities, tubercles, purulent expectorations, and the whole train of miserable symptoms, has also been shown by Dr. Emile Pereyra, physician to the hospital of St. André, Bordeaux, in an essay published two years since."

Mr. Donovan concludes his essay with a number of cases in which cod-liver oil has proved successful in the hands of Dublin medical practitioners. These comprised cases of enlargement of the glands of the neck, enlarged tonsils, hæmoptysis with cough and great debility, (incipient phthisis?) scrofulous disease of the knee-joint, ditto of testicle, &c. With respect to its power in diseases of the eye, Mr. Wilde states that "in cases of pannus and long-continued chronic ophthalmia, attended with granular lids, &c., where the constitutional powers had fallen below par, shown by diminution in volume, and increased quickness of pulse, pallor of countenance, coldness of the extremities, a clammy condition of the skin during the day, and heat and restlessness at night; together with loss of appetite, and a large flabby, putty-coloured tongue, which is usually attendant on such broken-down strumous patients," he has found it a most useful remedy; in fact, in all cases in which tonics and nutrition were indicated.

The author of this Report has used cod-liver oil extensively for several

years, his attention having been first directed to it by Dr. Bennett in 1840, and he can confidently bear out the concluding statement of Mr. Donovan, "that cod-liver oil is a most useful addition to our materia medica; that it produces effects of which no other known medicine is capable; and that it is well worthy of the attention of the medical profession."*

6. *Oils, their action on the animal economy.*—MM. Gluge and Thiernesse have instituted a series of experiments on this subject. They administered olive and cod-liver oil to dogs, rabbits, and kids, by injection into the veins, and also by the mouth. When either oil was injected into the veins, it usually produced dyspnœa, debility, painful sensations, and some affection of the circulation. The animals after a few days usually recovered from the first injection, but died very shortly after repeating the operation from difficulty of breathing, rapidly failing pulse, and complete prostration. On dissection, the lungs, liver, and kidneys were usually found in a more or less morbid state, exhibiting symptoms of inflammatory action; globules of oil and a peculiar kind of crystals were also very commonly noted in these structures. The blood was more or less fluid, and peculiar crystals were also observed in it. When pure cod-liver oil was used its action did not seem to differ from that of olive-oil; but the brown or dark coloured cod-liver oil produced rapid death, often within an hour after its injection. In these cases the lungs were gorged with black blood and emphysematous; and the blood besides being fluid contained a much larger proportion of oily globules, and of the peculiar crystals above alluded to.

When the oil was given by the mouth the dose was daily increased from a tablespoonful. For several days or weeks the animal maintained its health, but at length it began to refuse nourishment, got feverish, suffered from dyspnœa, agitation of the limbs, weakness, and gradually sunk. In every case the lungs were found inflamed, congested, often hepatized, and every where penetrated with oil. The liver and kidneys were also in general more or less engorged with blood.

From these experiments they deduce the following conclusions:

1. That olive-oil and pure fish oil do not act differently on the animal economy, whether taken by the mouth or injected into the veins, excepting in a few exceptionable cases in dogs, when the fibrin of the blood and muscles seemed to acquire additional density when cod-liver oil was taken internally. But this result was not constant.

2. That unclarified dark-coloured fish-oil, when injected into the veins produces rapid asphyxia and decomposition of the blood, as evidenced by the irregular form of the blood-corpuscles, and the presence of crystals in that fluid.

3. That the fatty oils, however introduced into the body, have a natural tendency to deposit themselves in the lungs, liver, and kidneys.

4. That in these organs they are deposited in two different ways; they exude into the parenchyma through the capillary vessels, or they become deposited in the biliary cells, the pulmonary vesicles, or the uriniferous canals.

5. That if a small quantity of oil be injected at once, the animal may recover from the effects.

6. That the effect of oil administered by the mouth varies much, according to the dose, and the period of time when the animal takes it.

7. That when the dose is daily increased, the animals lose their appe-

* Dublin Journal of Med. Sciences, Sept. 1845.

tite, become lean, cough, suffer from dyspnœa, and at last present all the signs of severe pneumonia, to which they fall victims.

8. That the pathological appearances consist of total or partial hepatization of the lungs, with accumulation of fatty matters in the parenchyma of the lungs, liver, and kidneys.

9. That the hepatization of the lungs is always, as to its extent, in proportion to the quantity of oil introduced into the system by the stomach.

10. That the oil administered by the mouth is absorbed by the intestinal villi, and being thrown by the circulation on the lungs, liver, and kidneys, produces fatty degeneration of these organs.

11. That the particular form of pneumonia caused by large doses of oil is similar to the bilious pneumonia of the older physicians.

12. That when oil is given medicinally for any length of time we ought to exercise the muscles as well as the lungs, and watch carefully its action, for although cod-liver oil may be a powerful therapeutic agent, its prolonged use (as commonly administered) is not unattended with danger.

7. *Belladonna.*—Stievenart of Valenciennes has continued his researches on belladonna. The following is a brief abstract of the physiological effects produced on 400 chilren to whom the drug was administered. Severe headache, with well-marked dilatation of the pupils, was observed in 212 cases. The pain usually lasted for about half an hour, and was generally referred to the region of the frontal sinus. This effect was frequently experienced by the author on taking a dose of twelve drops of the alcoholic tincture. A greater or lesser degree of delirium or hallucination was also observed in some (about twenty) of these cases, frequently lasting for several hours; twenty-five times there was pain in the throat for a short time. Well-marked redness of the skin was observed only five or six times; in 145 there was no apparent action of any sort produced. With regard to the method of administration, he regards the alcoholic tincture as the most certain, and the extract as the least efficacious. The remedy was given in this extensive way in order to test its asserted prophylactic power in reference to scarlatina, and it is worthy of remark that although that epidemic was raging in the neighbourhood, none of those who submitted to this treatment were affected.

8. *Lactucarium.*—Aubergier has continued his researches on lactucarium. He shows that the best form of exhibition is the alcoholic extract. The lactucarium is twice successively digested with alcohol of ·922, the fluids are then mixed, distilled, and evaporated on the water-bath. During evaporation the fluid must be constantly stirred. The extract obtained in this manner is brown, very bitter, and not deliquescent. It may be given in pills, or in the form of syrup. For the syrup, Aubergier recommends that every 500 parts should contain one of the extract. A case of insomnia after typhoid fever accompanied with severe epistaxis in which lactucarium was of service, after the failure of morphine and other sedatives has been recorded by Homolle. He commences with a grain and a half, and increases the dose to between four and five grains, given in the form of syrup. It was continued for three weeks, and produced calm and refreshing sleep unaccompanied by bad effects.

9. *Indian hemp.*—Lieautaud has communicated a series of experiments on this substance to the Academy of Sciences. During a residence of nearly two years in Indian China he had numerous opportunities of wit-

nessing its physiological effects in producing inebriation. Generally the inebriations were the more intense in proportion to the amount of resin in the hemp. Drunkenness produced by the gunjah, taken as a drink, is characterized by a peculiar state of extacy without convulsive phenomena. Liquids of this nature excite the nervous system much more energetically than when the same amount of the drug is smoked. The sequelæ are less distressing than those produced by opium, but the moral degradation and the dreadful consequences arising from it are closely allied. As there is every probability that this substance will soon find a place in our British Pharmacopœias, all trustworthy experiments with it are deserving of a passing notice.

Exp. 1. Ten grains of cherries of Nepaul dissolved in alcohol were given to a moderate-sized dog. In the course of half an hour it fell into a restless sleep, and on awaking and attempting to walk, it presented obvious indications of drunkenness. It devoured with avidity any food placed before it, and again relapsed into a state of stupor and torpidity. These symptoms continued for about two hours; in the course of six hours it had perfectly recovered.

Exp. 2. A drachm of magoun was given to a little dog, who seemed to enjoy it extremely. In the course of twenty minutes he was decidedly drunk, and did not altogether recover in less than four hours.

The alcoholic extract of gunjah in doses of between two and three drachms was given to three young goats, but no very marked effects were produced.

From these and other experiments Lieautaud concludes that the inebriating effect of Indian hemp is constantly to be observed in the carnivora and in fishes; the herbivora are apparently unaffected by it in any dose.

The animals experimented on did not exhibit the least indication of pain or of any convulsive action.

The following observations on the method in which the cannabis is taken in the East are extracted from a paper on this drug by Steeze, an apothecary practising at Bucharest.

The tops and all the tender parts of the hemp-plant are collected after the period of inflorescence, dried and kept for use. It must be premised that the hemp-plant is in the east distinguished by its narcotic properties, although botanists are unable to detect any difference between this and the European species. The dried hemp, or haschisch, is used—

1. Boiled in fat butter or oil with a little water; the filtered product is employed in all kinds of pastry.

2. Powdered for smoking; five or ten grains of the powder are smoked from a common pipe (*tsubuk*) with ordinary tobacco (*tutun*), or from a water-pipe (*nargiele*) with another kind of tobacco (*tombeki*).*

3. Formed with tragacanth mucilage into pastiles, which are placed upon a pipe and smoked in similar doses. These last two preparations are also termed *esrar*;† they are the most active of all the preparations of haschisch, and the first pipe will cause cerebral congestion in beginners.

4. Made into an electuary with dates or figs and honey. This preparation is of a dark brown almost black colour, and tastes of dates and hemp; it is less active than the esrar.

5. Lastly, another electuary is prepared with the same ingredients with

* The tombeki is probably the leaf of a species of Lobelia; it is smoked in a nargiele, and is uncommonly narcotic; so much so, that it is ordinarily steeped in water for a few hours before it is used to weaken it, and the pipe is charged with it whilst it is yet wet. † *Esrar* is the Arab word for a "*secret*."

the addition of spices—cloves, cinnamon, pepper, amber, and musk. This preparation is used as an aphrodisiac.

Haschisch is said not to produce stupor but the most pleasant species of intoxication. The person under its influence feels with perfect consciousness in the best of humours; all impressions from without produce the most grateful sensations: pleasant illusions pass before his eyes, and he feels comfortably happy; he thinks himself the happiest man on earth, and the world appears to him Paradise. From this imaginative condition he passes into the every-day state, with a perfect recollection of all sensations, and of everything he has done and of every word he has spoken. The effects of a continued use of the narcotic are emaciation and nervous debility.*

10. *Conium maculatum.*—Dr. Earle† has performed a series of experiments on himself, with the view of determining the physiological effects of this plant and its preparations. He took the extract three times a day, beginning with grain doses, and increasing each dose by a grain daily, so that on the tenth day he took ten grains three times a day. The doses were afterwards increased in a more rapid ratio. On taking 25 grains three times a day, he experienced, during breakfast, a disagreeable sensation, like the "fulness of the head," occasioned by a ligature round the neck. This was accompanied by a very slight vertigo. These effects were not perceived after either of the subsequent doses. On the following day (Jan. 16th) "Morning: took 30 grains; effects not so great as yesterday morning; 10 o'clock a.m. took 40 grains upon an empty stomach; it was followed by a greater tendency to vertigo than before, with a sensation as if the eyes were swollen and unnaturally protuberant. Evening: took 40 grains two hours after supper. Similar effects, but in a slight degree, and less than on the morning of the 15th, with 25 grains taken fasting. Slept seven hours and a half.

"17th. Morning: fifteen minutes before breakfast took 45 grains. While at the table the sensations of fulness of the head and tumefaction or enlargement of the eyes were uncomfortable and oppressive. The eyesight, slightly dim, became more so upon rising from the table, and the tendency to vertigo was at the same time increased. There was a feeling of mingled weariness and weakness in the knees, and the gait was not so firm as usual. Pupils of the eyes apparently somewhat dilated. 1 o'clock p.m. took 45 grains soon after eating an apple; in fifteen minutes there was a sensation of heat in the gastric region, followed by symptoms similar to those just described, though not of nearly so great severity. Evening: took 45 grains; effects much the same as at 10 o'clock. Slept seven hours and three quarters.

"18th. Morning: took 50 grains; vertigo commenced in twenty minutes, and in thirty minutes the dimness of vision and peculiar sensation in the knees already noticed. I now felt, for the first time, the sensation last noticed, in the lower part of the *biceps brachialis* muscle. I particularly studied this feeling, and can give no idea of it except by comparing it to a mixture of weariness and feebleness or debility. It was not unpleasant, and there was a constant disposition to flex and extend the fore-arm. Pupils apparently dilated. Ten o'clock a.m. took 60 grains; ten minutes afterwards the warmth in the gastric region was perceived, and in fifteen minutes cerebral symptoms commenced. In thirty-five minutes the action of the medicine seemed to have reached its maximum, which it maintained about

* Repertorium für die Pharmacie, Band xxxvii, Heft 2.

† The American Journal of Medical Sciences, July 1845.

fifteen minutes, with the sensations in the head, elbows, and knees already described, and to a greater degree than after any dose previously taken. In one hour and a half from the time of taking it its apparent effects had entirely disappeared. Half-past nine o'clock p.m., took 60 grains after eating apples. The action was less powerful than in the middle of the day. Slept six hours and a half."

Altogether seven succeeding doses of 60 grains each were taken. In addition to the above symptoms, double vision was observed on the two following days. No unpleasant effects followed the sudden suspension of the medicine. In a second series of experiments the dose was increased to 100 grains: the symptoms were nearly identical with those already described. The pulse was perfectly regular during the period of greatest influence, and perhaps a few beats slower than usual; it was also fuller and stronger. There was no perceptible augmentation or diminution of the urine during the course of these experiments; but on two occasions (after taking the largest dose in each experiment) there was a sensation of acute lancinating, and transient pain in the region of the neck of the bladder. As a soporific it seems perfectly inert.

11. *Aconite.*—The most important contribution to our knowledge of the materia medica that has appeared during the last six months is undoubtedly Dr. Fleming's treatise on aconite.* Passing over the first two sections which embrace the consideration of the history, botany, and physical characters of the aconitum napellus; the influence of climate and culture on its properties; the respective activity of different parts of the plant; the influence of seasons on the activity of the roots and leaves; and the physiological action of the plant on vegetables and animals,—we arrive at the consideration of its physiological effects on man. The topical action is first considered. It acts as a direct sedative to the nerves of sensation, and, as might be expected, its action is most marked when applied to a surface abundantly supplied with nerves. The physiological action on man in small or medicinal doses is considered under the four following degrees of operation.

First degree of operation.—In the course of twenty minutes or half an hour after the exhibition of five minims of the tincture, a feeling of warmth in the stomach is usually experienced, which is occasionally accompanied by slight nausea and oppression of the breathing. After the lapse of thirty or forty minutes this sense of warmth is diffused throughout the body, and in a few minutes more is attended by numbness, tingling, and a sense of distension of the lips and tongue. There is also tingling at the tips of the fingers, and a peculiar sensation is felt at the roots of the teeth. The feeling of warmth soon disappears, but the numbness and tingling of the lips and fingers continue for a period, varying from one to three hours. Slight muscular weakness is generally experienced, with indisposition for exertion either mental or corporeal. In about half an hour more the pulse is found to be diminished in strength, and in another hour both the pulse and the respiration have become less frequent. Thus a pulse which, in the normal state, beats seventy-two in the minute, will by that time have fallen to about sixty-four, and the respirations, supposing them to have been eighteen, to fifteen or sixteen.

Second degree of operation.—Should a dose of ten minims be given at first, or a dose of five minims be succeeded in two hours by another of

* An Enquiry into the Physiological and Medicinal Properties of the Aconitum Napellus. By Alexander Fleming, M.D. President of the Royal Medical Society of Edinburgh. London, 1845.

equal amount, these symptoms supervene more rapidly, and with greater severity. The tingling extends along the arms, and the sensibility of the surface is more or less impaired. In an hour and a half the pulse will probably have fallen to about fifty-six beats in the minute, and become smaller and weaker than before, still maintaining however, perfect regularity. The respirations will have diminished to about thirteen, presenting at the same time a slow, labouring character. Great muscular debility is now experienced; a giddiness, with confusion of sight, comes on when the erect posture is assumed. The individual sinks into a lethargic condition, evinces great disinclination to be disturbed, although he rarely falls asleep, and complains much of chilliness, particularly in the extremities, which are cold to the touch. These phenomena continue in their full intensity from three to five hours, when they gradually disappear, a sensation of languor, which lasts for several hours more, alone remaining. This is the utmost extent to which I would recommend the physiological effects of aconite to be carried, in order to obtain, with safety and success, its therapeutic action.

Third degree of operation.—On the administration of five minims more two hours subsequent to the last dose, the sense of warmth, and the numbness and tingling, again spread rapidly over the body. The sensibility of the surface is still further diminished; lancinating pains in the joints are occasionally complained of; the headache, vertigo, and dimness of vision are aggravated; the countenance grows pale and anxious; the muscular feebleness increases; the voice becomes weak, and the individual is frequently impressed with the dread of approaching dissolution. Occasionally the pulse is reduced still further in strength and frequency, perhaps falling to 40, or even 36 beats per minute, but still maintaining its regularity. More frequently, however, it rises to 70 or 80, and becomes small, weak, and probably more or less irregular. The respiratory movements are also irregular, being either short and hurried, or deep and sighing. The surface is moist, and still farther reduced in temperature. Sickness may now come on; and, if formerly present, is much aggravated, and probably attended by vomiting. These symptoms do not entirely subside for two or three days.

Fourth degree of operation.—On the administration of a fourth dose of five minims, two hours after the third, the symptoms assume a more alarming character. The countenance becomes pale and sunken; froth issues from the mouth, and the prostration increases. Some thus affected have stated that they felt as if dying from excessive loss of blood. Consciousness usually remains, or there may be slight wandering delirium, as occurs also after profuse hemorrhage. The voice is whispering, or is altogether lost. The pulse becomes still smaller, weaker, and more irregular, and the breathing more imperfect. The surface is colder than before, and is covered with a clammy sweat.

I have seen patients recover from this state under the administration of proper remedies. When the action of the drug is carried to a fatal extent, the individual becomes entirely blind, deaf, and speechless. He either retains his consciousness to the last, or is affected with slight wandering delirium, the pupils are dilated, general muscular tremors, or even slight convulsions, supervene; the pulse becomes imperceptible, both at the wrist and heart; the temperature of the surface sinks still lower than before, and at length, after a few hurried gasps, death by syncope takes place.

Dr. Fleming then treats in detail of the effects of aconite on the different systems of organs. We regret that we have merely space for his most important conclusions.

With respect to the action of aconite on the cerebro-spinal and muscular systems, he finds:

1. That it is calmative, anodyne, and antispasmodic.

2. That it is an advisable antiphlogistic in apoplexy, phrenitis, or any disease in which the circulation of the brain is excited.

3. That it is contra-indicated in headache arising from anæmia or chlorosis, and whenever there is a torpid or paralytic condition of the muscular system.

4. Its properties suggest its employment in convulsive or spasmodic diseases.

The following are the practical inferences deducible from a consideration of the action of aconite on the circulation:

1. That it is a powerful antiphlogistic.

2. That it is calculated to be of great value in all cases when there is inordinate activity of the circulation.

3. That it is contra-indicated, when there is obvious mechanical impediment to the passage of the blood, particularly through the heart or lungs. It is requisite, therefore, in every case, to ascertain that no such obstruction exists before commencing its use.

4. That it is contra-indicated, whenever there is irritability of the circulation, with great diminution of power, such as occurs after severe hemorrhage.

The practical inferences respecting its action on the respiratory system are these:

1. Aconite will probably be found a highly advantageous antiphlogistic in pneumonia, pleuritis, &c.

2. It seems calculated to be serviceable in spasmodic asthma.

3. It is contra-indicated in difficulty of breathing, arising from any other cause than inflammation or spasm.

4. In cases of advanced bronchitis, with excess of secretion, it would prove highly injurious, by diminishing still further the power of expectoration.

After noticing the effect of aconite on the alimentary canal, and secretory system, he proceeds to the consideration of the effects of the drug in large and poisonous doses. This section belongs more to medical jurisprudence than to materia medica. He concludes it with the observation, that "four grains of the alcoholic extract have proved fatal, and two grains have produced the most alarming symptoms."

Section 4th, embracing the therapeutic action of aconite, abounds in matter of the highest interest, and deserves a most attentive perusal. We could not, in justice to the author, much abbreviate it, and we shall therefore conclude our notice with a few observations on the method of administering aconite. The preparations expressly noticed by Dr. Fleming are:

a. Tinctura aconiti. Take of root of A. Napellus, carefully dried and finely powdered, 16 ounces troy; rectified spirit, 16 fluid ounces; macerate for four days, then pack into percolator; add rectified spirit until 24 ounces of tincture are obtained. It is beautifully transparent, of the colour of sherry, and the taste is slightly bitter.

b. Extractum alcoholicum aconiti. This is prepared by distilling, at a low temperature, the spirit for the tincture, until the consistence of an extract has been obtained. The process should be completed in a vapour-bath. The colour is dark-brown, or almost black; it has an agreeable smell, and a bitter taste. The dose is one third of a grain, thrice daily; commencing with one sixth of a grain.

Of these two preparations, Dr. Fleming prefers the tincture, from its greater uniformity of action; the average dose is five minims three times daily, and to be increased, if requisite, by one minim each dose.

c. For external use, the following formula is recommended:

℞. Aconitinæ . . gr. xvj.
Spirit. rect. . . ♏ xvj, fere optime.
Deinde adde axungiæ . ℥j, ut fiat unguentum.

If, after a few applications, this ointment loses its effect, the proportion of aconitina must be increased to three, four, or even eight grains to the drachm. (36.)

12. *Valerianate of quinine* has been somewhat extensively used by Dr. Castiglione, who has communicated the results of eighteen cases. It was employed nine times in intermittent fever, twice in cephalalgia, twice in rheumatic pains, once in hemicrania, twice in epilepsy, and twice in supra-orbital neuralgia. Fifteen patients were cured within a space of two to eight days, three (viz. the two epileptic patients, and the case of hemicrania) were only relieved. The dose was half a grain every two hours, administered in a little sugar. The smallest quantity required to produce a cure was six grains, the largest thirty-five grains. In the majority of cases no peculiar symptom seemed to be produced by the remedy: three times it caused a sensation of burning in the throat and stomach, with sickness and vomiting; and, as in these three cases the salt was prepared from valerianate of lime and sulphate of quinine, the disagreeable symptoms might have arisen from the admixture of a little sulphate of lime. It is stated to act as a contrastimulant and powerful febrifuge.

13. *Tannate of quinine* has been recently administered by Dr. Hauff with great success in cases of neuralgia, and fever of an intermittent type, where the sulphate of quinine had failed. The dose is about the same as that of the other salts of quinine. This salt had been previously recommended in 1831 by Renarder, and in 1833 by Buchner, in similar cases.*

14. *Monesia.* This remedy, which was brought very prominently forward a few years ago, but since then has gradually been merging into obscurity, has found a warm advocate in Dr. Halbout, of Genesse. He has never observed any bad effects from its administration, and regards it as a most important medicine in certain infantile disorders. The principal diseases in which he has administered it are, angina tonsillaris, aphthous affections, diarrhœa, menorrhagia, ulceration of the nipple (a wash composed of the extract of monesia and water, frequently applied), and solutions of continuity of the skin generally. He concludes with a notice of ulcerations of the rectum, which was completely cured by an ointment, and clysters, containing extract of monesia, after all other remedies had failed.

15. *Hydrocyanic acid.* Liebig, in his lectures on the benzoile series, observes, that "the distilled waters of bitter almonds, and lauro cerasus, is considered a highly important remedy, and has by many physicians been applied with excellent success, being in fact considered the most appropriate form in which to administer hydrocyanic acid. Physicians usually prefer the water of lauro cerasus to that of bitter almonds, not because there exists the slightest difference in the nature and properties of these two waters, but because the distillation of the paste of bitter almonds is attended with greater difficulty than that of the leather-like leaves of lauro cerasus; and, moreover, because the preparation of the water of bitter almonds is usually attended with the loss of a considerable amount of the

* Oesterlen's Jahrbücher.

hydrocyanic acid formed. The Pharmacopœias prescribe, for the preparation of the two distilled waters, definite quantities of bitter almonds, or of lauro cerasus; but if we take into consideration, that it is by no means proved that the leaves of lauro cerasus possess the same composition, at all seasons, and, on the other hand, that bitter almonds are so frequently adulterated with sweet almonds; and if we, moreover, reflect upon the fact, that the amount of hydrocyanic acid, contained in the distilled water of bitter almonds and lauro cerasus, is constantly diminishing, owing to certain peculiar modifications, which this acid undergoes, we cannot avoid coming to the conclusion, that the composition of these waters is subject to many vicissitudes. Physicians would, therefore, act very judiciously, were they to expel these waters from their pharmaceutical prescriptions, and to substitute for them a certain amount of amygdaline, dissolved in water, and mixed with emulsion of sweet almonds, since this remedy, prepared fresh every time when it is to be administered, will invariably possess the same composition: 17 grains of amygdaline yield 1 grain of anhydrous prussic acid; consequently, by mixing 34 grains of amygdaline with 66 grains of emulsion of sweet almonds, so that the total amounts to 100 grains; we obtain a fluid corresponding to the medicinal hydrocyanic acid of the Prussian Pharmacopœia (2 per ct.) $\frac{1}{3}$ grain of amygdaline corresponds to 1 gr. of medicinal acid: the solution of 1 gr. of amygdaline in 3 ounces of emulsion of sweet almonds, contains, consequently, 1 gr. of medicinal acid for every ounce of the mixture.

We cannot conclude this Report without a favorable notice of the 'Elements of Materia Medica and Therapeutics,' by Drs. Ballard and Garrod. As a manual for students, it is the best that has yet appeared, and will be found to contain much matter well worthy of perusal by the practitioner. It possesses the especial advantage of carrying its information to the date of its publication.

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OR LIST OF BRITISH AND FOREIGN WORKS PUBLISHED DURING THE PRECEDING SIX MONTHS.

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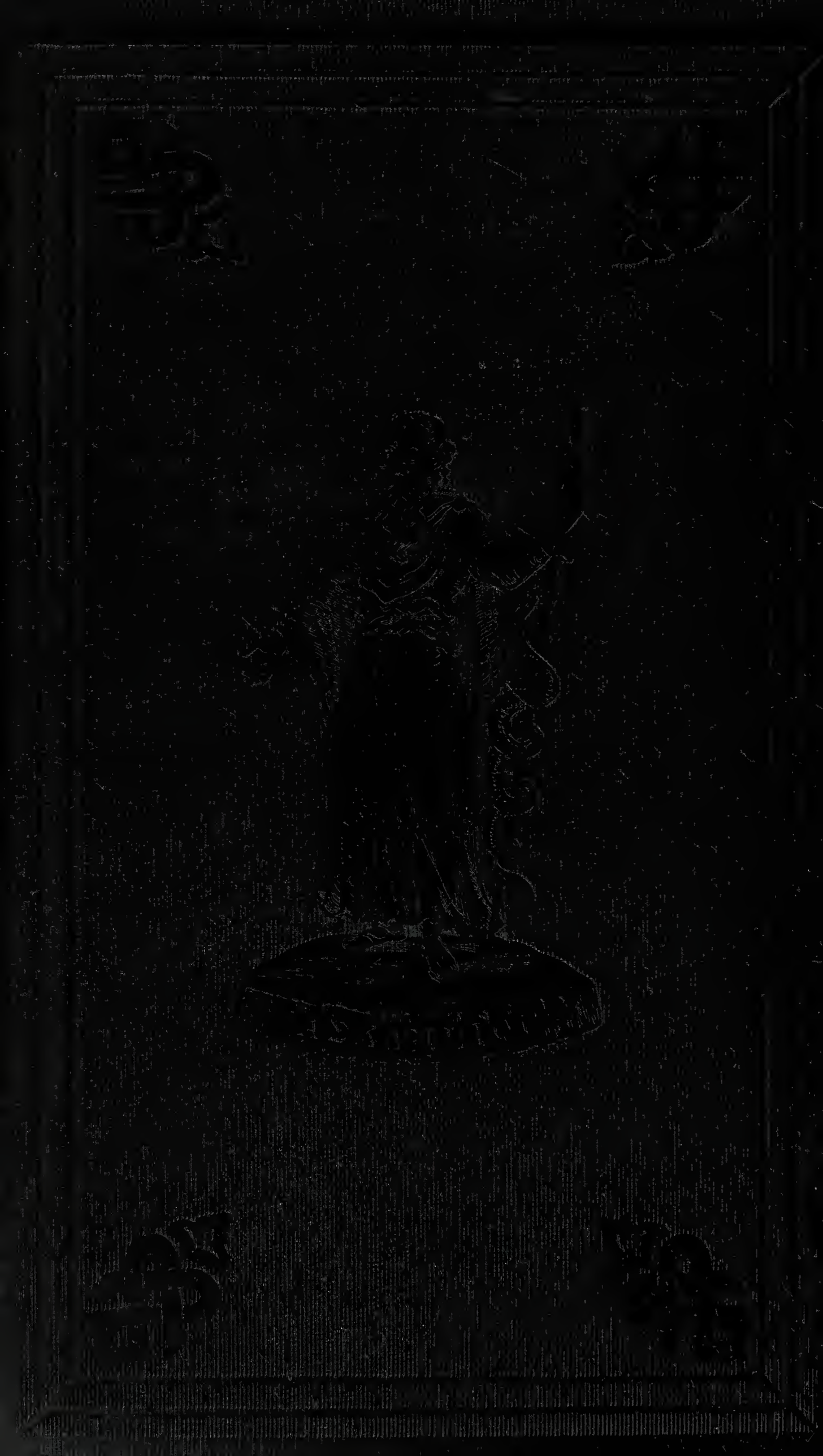
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